AKANE SHIMIZU

03

Cells at Work!

はたらく細胞

NOW I'VE ACQUIRED THE ABILITY TO SEE THE FUTURE, TOO...!!

NOT ONLY DO I REMEMBER THE PAST BATTLES AGAINST ANTIGENS...

MEMO-RY!

HEY, MEMO-RY!!

YELP!

SERIOUSLY.

CAN YOU STOP THAT RAMBLING AND FOCUS ON RECORDING INFORMATION ON ANTIGENS?

WHETHER OR NOT I CAN DO MY PART IN A FIGHT AGAINST ANTIGENS DEPENDS ON YOUR KNOWLEDGE, MEMORY CELL!

R-RIGHT...

THAT MEANS THAT WHEN THAT VIRUS APPEARS...

...THE WORLD... WILL END...

DING

WE'VE JUST DETECTED A VIRAL INFECTION IN A PAROTID GLAND.

IMMUNE CELLS IN THE AREA, PLEASE HEAD TO THE SITE RIGHT AWAY.

I DON'T KNOW WHAT KIND OF VIRUS IT IS, BUT LET'S GET OUT OF HERE!

TOUR

SEE? IT'S THAT ONE IN THE SHADOW THERE.

SO FUNNY LOOK-ING.

WHAT IS THAT THING?

R-RIGHT...

TIME TO WORK!!

C'MON, LET'S GO! IF IT'S AN ANTIGEN WE KNOW, WE CAN BEAT IT WITH ANTI-BODIES.

RRRUMBLE

KUMP

KUMPKUMP

Antibodies
Antibodies are made up of proteins called immunoglobulins (Ig). They bind to antigens in foreign substances so that immune cells can eradicate them.

MUUUMP

MUMP

WHAT IS THAT? WHAT AN ODD VIRUS.

NEVER SEEN IT BEFORE.

?

...HELLO? MEMORY?

ANYTHING IN YOUR MEMORIES, MEMORY?

WHOA! H-HUH?!

THAT DOESN'T LOOK GOOD.

H-HOLD UP.

I CAN USE MY FUTURE VISION TO FIND A WAY TO SAVE IT...!! COME ON... COME ON...!!!

C-C-C-CALM DOWN... THE WORLD DOESN'T HAVE TO END...!!

MEMO-RY?!

MUMPMUMP

MUUUUMP

LOOM

W-WHOA WHOA WHOA...!!

TH-THIS ISN'T FUNNY!

~PAPAH

THERE'S A TON OF THEM ALL OF A SUDDEN!!

ふく

MUMP

WHACK

EEK ...

SLASH

ANTIGEN SIGHTED!

OH, HEYA, NEUTRO-PHIL.

HEY. IT'S BEEN A WHILE—

B CELL, MEMORY CELL.

White Blood Cell (Neutrophil)
His main job is to destroy foreign substances that enter the body from the outside, such as bacteria and viruses. Neutrophils make up more than half of the white blood cells in the blood.

HUH? HEY, WHAT'S THE MATTER, MEMORY CELL?
POP
POP
CELL
COME ON... FUTURE VISION... COME ON... COME ON...!!
WHAT'S WRONG...? MY THIRD EYE... OPEN NOW!!

MUUUMP MUUUMP
TSK TSK TSK
MUMP MUMP MUMP

WHAK
HUH?!

BLOOD
AH!

ALIGH! HERE THEY COME!!

GUH!

LOOM
LOOM
LOOM
LOOM
LOOM
LOOM
MUMP MUMP
MUMP MUMP
MUMP MUMP
MUMP MUMP

LOOM
MUMP MUMP

NGH...
HE'S STRONG ...

AAAAUGH!
LOOM
WHA— WAIT— YOU'RE KIDDING— HUH?!
CELL

AAAH

TH-THEY'RE ...

GAGH

SPLASH

...MULTI-PLYING AT A CRAZY PACE!!

BWOP ボコ

BWOP ボコ

CELL

PWAK!

PWAK!

THEN THAT MEANS THIS BODY WILL —!!!

THIS CONFIRMS THAT MY FUTURE VISION IS REAL...!!!

MAYBE IT'S A LITTLE DIFFERENT FROM WHAT I SAW... STILL...

FIGHTING BETWEEN CELLS BROKE OUT, JUST LIKE IN MY VISIONS...

OH NO...

AAA

AAUGH

I CAN'T MAKE ANTIBODIES WITHOUT DATA ON ANTIGENS! I NEED ANTIGEN PRESENTATION FIRST...

YOU CAN BEAT THEM ALL WITH ANTIBODIES, CAN'T YOU?!

H-HOLD ON A SEC.

OH, B CELL, YOU'RE HERE!

YOU!

AUGH

USE YOUR ANTIBODIES AND SAVE US! THIS VIRUS IS BAD NEWS!

おな TREMBLE おな TREMBLE

HUH?!

AUGH

THEN BEAT THEM WITHOUT ANTIBODIES!!

AUGH

WELL... I AM A KIND OF WHITE BLOOD CELL—

BUT I CAN'T PHAGOCYTOSE...I SPECIALIZE ON ATTACKS USING ANTIBODIES...

AUGH

CONCEN-TRATE! CLEAR YOUR HEAD! SET YOUR LIFE ON FIRE...!!

I'M THE ONLY ONE WHO CAN SAVE THIS BODY...

WH-WHAT'D YOU CALL ME?!

COME ON!! DO SOME-TH NG, YOU USE-LESS BUM!!

BUT WHAT..?

AND SOMETHING. SOMETHING FALLING FROM THE SKY...?

A WAR.

AN ODD VIRUS.

WHAM

WHAM

WHAM

WHAM

WHAM

GUH... I CAN'T FIGURE IT OUT AT ALL!! COME ON, MIRACULOUS FUTURE VISION POWER!!!

HEY, WHAT ARE YOU DOING, MEMORY CELL?!

RIGHT, HERE I GO!

SHWIP しゅぱっ

TIMES LIKE THESE ARE EXACTLY WHEN I NEED TO STEP UP!

Inferior Vena Cava

GRIP

SH SLOW AND STEA

POW

HUSTLE

HUP

HUSTLE

IT'S WHEN THE ROADS ARE COMPLICATED THAT I LOSE TIME

ARE YOU ALONE? DO YOU WANT ME TO GO WITH YOU?

HUH? HEY—

HUH ?!

SHE DOESN'T EVEN HEAR MY VOICE...

SH— SHE'S ON FIRE

BUT I HATE THAT IT'S ALL UPH...

THE INFERIOR VENA CAVA IS JUST ONE B.G ROAD SO IT'S EASY ENOUGH

CO_2

CO_2

CO_2

SLASH

MUUUUUUUUUMP?!

ROGER THAT! THANK YOU.

THAT SHOULD DO... HA HA.♡

Macrophage
A type of white blood cell. These search and kill foreign substances such as bacteria and determine antigens and information on immune responses. They also act as cleaners who remove debris such as dead cells and bacteria

I'LL BE RIGHT BACK TAKE CARE, EVERYONE!

I'M GOING TO GO TO COMMANDER HELPER T TO PRESENT THE ANTIGEN.

ANTIGEN PRESENTATION WILL LEAD TO REINFORCEMENTS. .

GLARE

AGH!

AGH!

DAMN

BUT CAN WE HOLD OUT THAT LONG...?!

HFF
HFF

ガラッ

SLIDE

HUH?

WHERE DID THEY GO?

MEMORY AND B CELL

GUH!

COME ON, B CELL! HELP ME LOOK!

DON'T TALK TO ME, B CELL!

I CAN ALMOST . ALMOST SEE THE FUTURE!!

ISN'T THERE ANYTHING?! WE HAVE TO DO SOMETHING!

WE'VE GOTTA FIND SOME CLUE! SOME VIRUS LIKE THE ONES WE'RE FIGHTING!

THE FUTURE ?! THIS IS AN EMER-GENCY ...!!

AREN'T YOU...

A MEMORY CELL?!

DUNZAG

FORGET THE FUTURE...

...AND REMEM-BER THE PAST!!!

HUH ...?!

IT HAPPENED SO SUDDENLY...

YES...

...CAME A GIANT PIPE...

OUT OF THE DISTANT SKY FAR OUT OF ANYONE'S REACH...

ROOO AR RRR

WHOA?!

WHAT IS THAT?!

OUT OF THE PIPE FLEW COUNTLESS SPHERES SEALED BY POWERS FROM ANOTHER WORLD...

HEY THERE'S SOME-THING.

COMING OUT OF THAT CAPSULE..!!

ゴゴゴ

WHAT'RE THESE?! THEY'RE WEAK!

YEAH, REALLY WEAK!

SLASH

SLAB

SUPER WEAK!

WELL... I GUESS WE SHOULD FOLLOW PROTOCOL...

GOT T

..AND PRESENT THE ANTIGEN AND PRESERVE THE DATA ON THE SAMPLE.

SO THERE YOU HAVE IT..

PHEW... THEY WERE REALLY WEAK.

WHAT THE HECK WAS THAT?

WHO KNOWS?

SURE, OKAY!

PLEASE RECORD THE INFORMATION ON THIS ANTIGEN...

...MEMORY CELL!

IT...IT WASN'T FUTURE VISION AT ALL...!!

BUT WHAT I SAW IN THE PAST!!

Vaccination
Administering pathogens (bacteria or viruses) or toxins with reduced toxicity lets the body acquire immunity thus making future infections less likely. The antigens administered in this manner are called vaccines.

GAH!

THUD

HIGH

HIGH

DAMN
..

LOOM

HAAH. HAAH.

M-WHERE THEY COME!

LOOM

THEY'RE GOING TO FALL ON US ALL AT ONCE!!

LOOM

LOOM

AAAAAAA

MMMMMMP

RUMBLE

RUMBLE

RUMBLE

RUMBLE

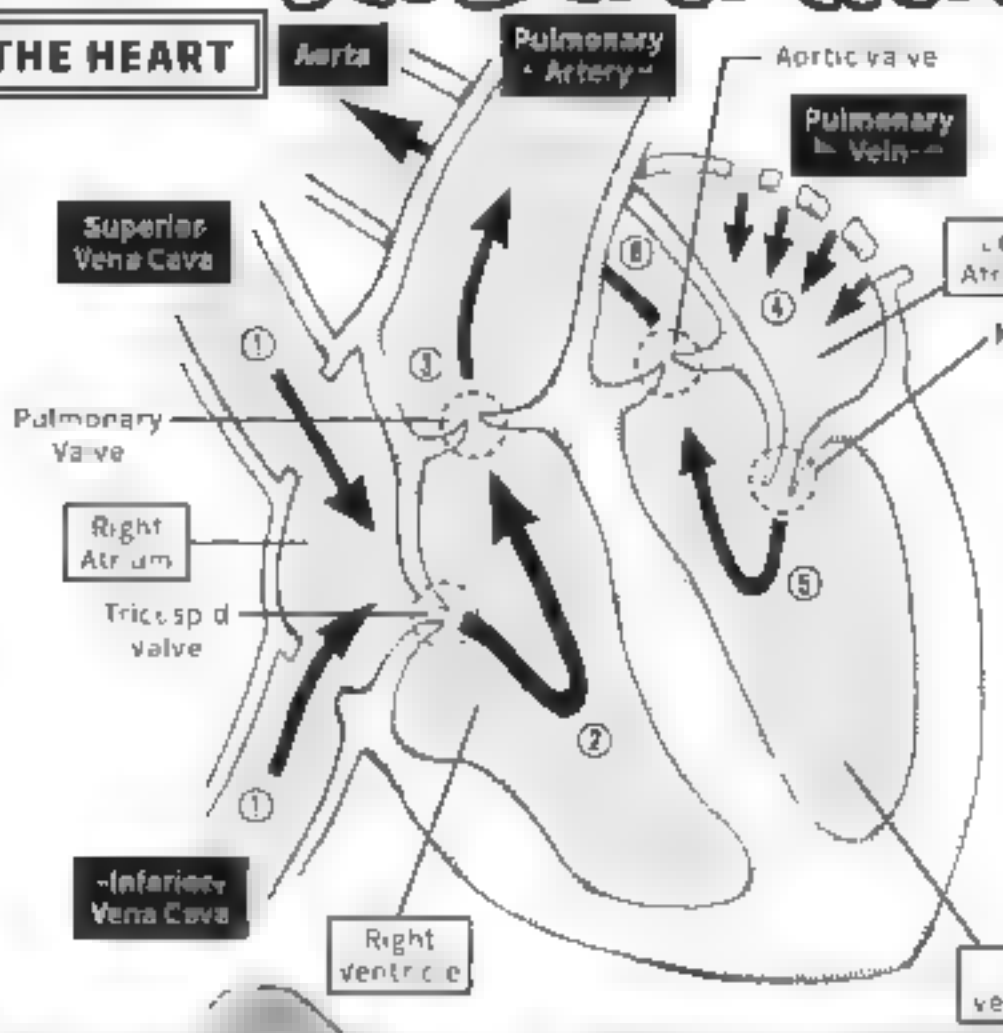
?!

ROOOARRR

ガバァアアア

TA-DA-A-A-A!

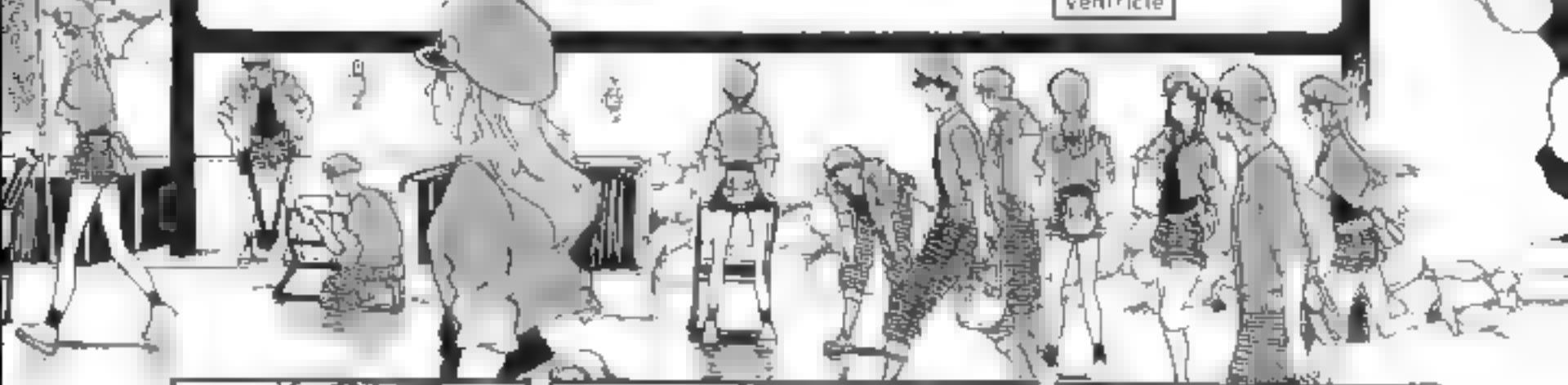
THE HEART

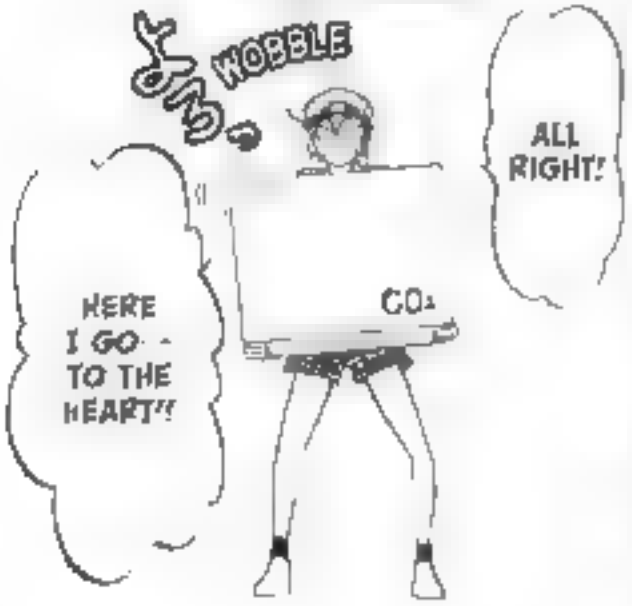


Pulmonary Circulation and Systemic Circulation

Pulmonary circulation proceeds from the right ventricle, then to the pulmonary artery, lungs discarding carbon dioxide and receiving oxygen, pulmonary vein, then to the left atrium. It takes about 3 or 4 seconds per cycle. Systemic circulation proceeds from the left ventricle to the aorta, then to the arteries, capillaries dropping off oxygen and nutrients and receiving carbon dioxide and other unneeded chemicals, the veins, the superior vena cava, then to the right atrium. It takes about 20 seconds per cycle.

To reduce crowding, please fold your carts.





GAS HINK

SORRY TO KEEP YOU WAITING!

ANTIGEN LOCKED ON!

ウウ PSHH

STAAARRAKE

ウHHウH ウ

DENTIFYING TARGET

ぽか

ん…

CA T CHUNK

ENERGY CHARGE, COMPLETE.

Bip Bip Bip

NIPWE TEEM

DIT DIT DIT DIT DIT DIT DIT DIT

MUMP?!

MUMP MUMP

TAKE THIS, VIRUS...

THIS IS THE POWER...

POP

POP

POP

...OF ACQUIRED IMMUNITY !!!

BOOM

BOOM

BOOM

Acquired Immunity
immunity that is acquired after birth by infection or vaccination

COUNT ON YOUR B CELLS

E.M.P

BLAM

BOOM

THE ANTIGENS WERE WIPED OUT WITHOUT A TRACE.

WITHOUT EVEN PRESENTING ANTIGENS!

AWESOME! ONE HIT!

THANKS TO THE POWER OF ANTIBODIES...

HEH HEH HEH.

HEH HEH... YOU CAN THANK MY MEMORY ..

...WITHOUT ANTIGEN PRESENTATION.

..FOR HELPING TO MAKE ANTIBODIES..

ANTIBODIES ROCK!!

YEAH, B CELL!!

W-WAIT, DON'T SAY IT—

ALL OF THIS HAPPENED BECAUSE—

WHAT'RE YOU TALKING ABOUT?!

...AND FORGOT ALL ABOUT THE VIRUS THAT WAS PROPERLY RECORDED AS AN ANTIGEN!

YOU KEPT RAMBLING ON ABOUT FUTURE VISION...

H-H-H-HOLD ON... B CELL ..?!

おっけらーかん
OBLIVIOUS

WAIT 'L YOU HEAR THIS.

YEAH, HE REALLY MESSED UP, THIS GUY—

WHAT'RE YOU SAYING?

MUMPS VIRUS

SEE, LOOK AT THIS!

IT'S RECORDED SO CLEARLY! A VIRUS THAT CAUSES MUMPS!

The Mumps Virus
The viral pathogen of mumps a.k.a epidemic parotitis infection causes one or both parotid glands one of the large salivary glands, under the ear to swell

AH HA HA HA HA HA!

ISN'T THAT SO STUPID?! AND WE ALL FOUGHT SO HARD!

P-PLEASE FORGET THIS EVER HAPPENED!

IT'S YOUR JOB TO REMEMBER THIS STUFF!!

WHITE BLOOD CELL

...

I'M TIRED NOW

OH...? SHOULD I NOT HAVE SAID ANY-THING?

CHAPTER 13: END

KILL
WHITE
BLOOD CEL
1143

Cells at Work!

はたらく細胞

WHOOOOSH

STEP

...!

WHITE BLOOD CELL 114-6

White Blood Cell (Neutrophil)

H s main ob s o destroy fore gn substances ha e en er the body from he outs de such as bacter a and v uses Neu rophils make up more than ha f of the white blood ce s n the b ood

WELCOME TO THE HEART!

OH NO! I DROPPED MY NOTES!

DROP

!

MY PRECIOUS NOTES—!!

TRICUSPID VALVE

DING

THE TRICUSPID VALVE WILL OPEN SHORTLY.

DAPPA DAPPA DAPPA DAPPA DAPPA

STAMPEDE

CHAPTER 14: PIMPLE

Hair Root
The par of the ha unde the skin. rom which the hair grows

SO THERE'S TROUBLE AT THIS HA R ROOT...

RUMBLE

RUMBLE

WHITE BLOOD CELL

HEY, STOP SLACKING OFF!!

HUH?

THIS IS NO ORDINARY AMOUNT OF INFLAMMA-TION...

WHAT IN THE WORLD IS GOING ON HERE...?

WHOOSH

COME ON, MAKE THAT SEBUM!!

WHIP

BLOOD

GARJNK

GARJNK

GARJNK

HAAH

ANYONE SLACKING OFF GETS A HUNDRED LASHES!!

Sebum
An oily semiflu d secretion of the sebaceous glands. protects and mo stur zes hair and sk n

HMMM, DO WE HAVE A SLACKER HERE?

HEH HEH HEH.

HAAH... HAAH..

HAAAH... I-I CAN'T GO ON...

THUD

AAH

しゅっ

FWP

STOP!!

HERE COMES THE HUNDRED-LASH—

DON'T HURT THE ELDER!!

D-DON'T, CHILD.

Hair Matrix Cell
Creates hair through cell division

GRAB.

KEH HEH HEH. SUCH POINTLESS RESISTANCE IS—

SLASH

GAAAH!

DIE, YOU GERM SCUM!

WHITE BLOOD CELL

I'M A WHITE BLOOD CELL WITH THE NEUTROPHIL DIVISION.

CAN YOU TELL ME WHO YOU ARE?

WHAT HAPPENED HERE?

どよ どよ

I'M A MELANOCYTE.

I'M A SEBACEOUS GLAND CELL

CLANG

だわ

WE'RE CELLS WORKING IN THIS PORE.

BUT ONE DAY, WE WERE INVADED BY THE ACNE BACTERIA AND TAKEN OVER..

THIS IS NOT A NORMAL PORE ANY MORE, BUT A *PIMPLE!*

Sebaceous Gland Cell
Produces sebum

LIKE MAKING SEBUM AND SKIN PIGMENTATION

BEFORE, WE EACH DID OUR JOBS...

Pimple
An inflammatory disorder of the skin. The inflammation is caused by sebum clogging the pore. Common where sebum production is high. Often accompanied by pus and pain.

Melanocyte
Makes skin pigments called melanin

WHAT'S THIS? WHAT'S THAT RUCKUS !?!

!

BUT IF THEY FIND OUT ABOUT THIS.

HEY DON'T

YOU HAD TO GET YOURSELF INVOLVED...

RUSH

HUH?! WH-WHAT'D YOU DO, YOU WHITE BLOOD CELL!?!

I-IT'S THE ACNE BACTERIA!!

Acne

A common bacterium that can cause pimples. Its scientific name is Propionibacterium acnes. It dislikes oxygen and likes sebum

AAAAH

GAH!

ACNE?!

THERE'S SO MANY OF THEM!

AAAH!

SLUNGE

LOOK OUT!!

LEAP

OH CHILD DON'T !!

DASH

MR WHITE BLOOD CELL, I'M GOING TO FIGHT TOO!!

!!

MIS-TER?!

CHOMP

GUH!!

NOW, GET BACK TO YOUR POSTS!!

NO ONE'S GOING TO SAVE YOU!

HA HA HA HA!

BWA HA HA HA HA!

!!!

CRMBL CRMBL CRMBL

AAAAUGH!

CHILD ?!

OH NO. THE WHITE BLOOD CELL TOO!

JOLT

GASP!

WHERE ARE WE?!

OH, ARE YOU AWAKE?!

I'M SORRY ABOUT WHAT HAPPENED! IT'S ALL BECAUSE OF ME. .

NNH. .

NO. YOU DIDN'T DO ANYTHING WRONG.

BUT WHAT ARE THOSE GUYS?

IT ALL BEGAN .

.WITH SUCH A SMALL THING.

THE PIPES TO SEND SEBUM TO THE EPIDERMIS GOT CLOGGED WITH DIRT..

..THEN THE WHOLE PORE BECAME FULL OF SEBUM

THE ACNE GERMS CAME FOR THE SEBUM AND GREW STRONGER.

BEFORE WE KNEW IT, THEY TOOK OVER THE WHOLE PORE AND TURNED US INTO SLAVES...!!

LOOK OVER THERE

!!!

WHAT?

THEY GAVE UP THEY ALL DID.

SURE THEY DID BUT

DIDN'T ANYONE ELSE COME TO HELP?!

WHY DID YOU LEAVE THEM UNTIL THEY MULTIPLIED SO MUCH?!

BLOOD CELL

BLOOD CELL

I-IS THAT PUS...?!

NO... THEY'RE CORPSES OF WHITE BLOOD CELLS LIKE ME...!!

BOOM

Pus

An opaque slime that suppurates from inflamed tissue. It is made up of a serum made of white blood cells, mostly neutrophils, as well as broken-down tissue and dead bacteria

BUT .. LOOK AT THEM NOW...

THEY WERE ALL BRAVE WARRIORS LIKE YOU, MISTER.

PLEASE UNDERSTAND, CHILD.

THE BEST THING IS FOR US TO MEET OUR END QUIETLY.

WE CANNOT ALLOW ANY MORE SACRIFICES TO BE MADE FOR THE SAKE OF ONE PORE.

BUT TO THE REST OF THE BODY, IT'S BUT A SINGLE PORE

THIS HAIR ROOT IS OUR HOME, AND THE PLACE WHERE WE WORK.

I SEE .

HIC! SOB

RUSTLE

SNIFF SNIFF

IF I ONLY IF I ONLY HAD THE COURAGE OF WHITE BLOOD CELLS LIKE YOU

LEO POMF

WHITE BLOOD CELL

HUH ...?

WE'D WORKED SO HARD!

GETTING RID OF WASTE... REGULATING THE BODY TEMPERA-TURE...

Pore
Small openings on the surface of the skin from which hairs grow. It also outputs sebum, sweat and waste, playing an important role in thermoregulation and moisture retention.

NO MATTER HOW SMALL THE IMPACT...

WHITE BLOOD CELL 1146

REQUEST-ING RE-INFORCE-MENT FROM ANYONE IN THE AREA.

YOU GOT IT !

HUH. ?! B-BUT—

THIS IS NO. 1146

I FOUND A NEST OF ACNE BACTERIA AT THE PORE N QUESTION.

...IF THERE'S A GERM INFESTATION IN THIS BODY, I WON'T STAND BY AND WATCH.

MY JOB— OUR JOB— IS TO NOT LET THAT HAPPEN.

WHITE BLOOD CELL

MIS-TER..

THIS S THE R GHT ATRIUM. THERE IS HEAVY FLOW BECAUSE OF MERG NG TRAFF C FROM THE NFERIOR AND SUPER OR VENAE CAVAE WE THANK YOU FOR YOUR UNDERSTAND NG

STAMPEDE

DAP

DAPPA

DAP

current

PLEASE DO NOT STOP, AND MOVE THROUGH QUICKLY

HUH?! WHA?! WHY'D THEY COME FLYING AT ME?!

健康祈

WHAT'S THAT NEUTRO-PHIL DOING?

DOONK

WHOP

THUMP

EXCUSE ME MY NOTES

MY NOTES !!

THUMP

THUMP

MY NOTES !!

LUNGE !!

CATCH

SLIDE

GAH AAIOK!

HUH?

WHIP

EEEEK! PLEASE DON'T!

ALL RIGHT A HUNDRED LASHES FOR YOU! SIT RIGHT THERE!

DISAPPEAR

GAAAAAUGH!!

YOU CAME BACK ALIVE .. NOT BAD!

HMM . I THOUGHT YOU WERE DEAD, WHITE BLOOD CELL

YOU'LL BECOME A PART OF THE PUS!!

I, THE ACNE KING, WILL ADD YOU TO MY COLLECTION OF WHITE BLOOD CELL CORPSES!

LUNGE

WHITE BLOOD CELL

11-6

I'LL KILL YOU FIRST !!

LOOK OUT!

DON'T FALL!

DIIIIIE!!

RA

RA

WR

YAHI

SLAB

GAAAH!!

GRAB

LUNGE

GUH!

I'LL CRUSH YOU AGAINST THE WALL...!!

WOW
SMASH
WHAT
WHAT LUCK AT THAT
COULD HE WIN ?
HAAH
HEH HEH NOT BAD— HOW-EVER!
YOU'VE YET TO SEE MY TRUE POWERS!
HAAH
HAAH
WHITE BLOOD CELL
YOU'LL KNOW ENDLESS SUFFERING, JUST LIKE YOUR COLLEAGUES...!!
WHAT ?!
STRANGE
WHAT CHEAP TRICK DID YOU USE, ACNE KING?
IT'S HARD TO SEE HOW YOU COULD HAVE KILLED SO MANY WHITE BLOOD CELLS WITH THAT SLOW FAT BODY OF YOURS.

CRUNCH CRUNCH

OIL

!

HA HA HA HA

LOOK! THIS IS MAKING THE MOST OF HOME-FIELD ADVAN-TAGE!

SO I CAN HEAL AS MANY TIMES AS I WANT!!

THERE'S AN ENDLESS SUPPLY OF OUR FOOD, SEBUM, HERE!

SHINE

SHINE

BURRRP

SHINE

BLOOD CELL

GUH

SLASH!

ゴゴォォ～

GONGGG

TH-THIS ISN'T GOOD.

カッ

WHACK

OH NO!

LET US ACCEPT OUR FATE WHAT'S ONE PORE AFTER ALL ?

...

THAT ONE IS ALSO DESTINED FOR THE PUS...

JUST AS I THOUGHT... IT'S NO USE.

...IS TO NOT LET THAT HAPPEN.

MY JOB— OUR JOB...

...IF THERE'S A GERM INFESTATION IN THIS BODY, I WON'T STAND BY AND WATCH.

NO MATTER HOW SMALL THE IMPACT...

WHITE BLOOD CELL

GUH ..

ELDER .. ELDER, YOU..

WHA?!

SLAP

YOU'RE A FOOL!!

IT'S NOT RIGHT FOR US TO GIVE UP!!

THAT WHITE BLOOD CELL... AND ALL THOSE WHO DIED... THEY ALL FOUGHT FOR ONE HAIR!

CH-CHILD?! HOW COULD YOU DO THAT TO THE ELDER. ?

EVEN IF IT'S JUST ONE HAIR. THIS IS OUR PRECIOUS HOME!

THAT WHITE BLOOD CELL SAID THAT HE'D FIGHT NO MATTER HOW SMALL THE IMPACT! BECAUSE THAT'S HIS JOB!

I'M SORRY, ELDER, BUT I,

CH... CHILD...

ELDER—

WAVE

ELDER... WE ALSO...

...FEEL THE SAME WAY!

WHIP

NOW IS OUR TIME TO RISE UP...!!

SNAP!!

MY DEAR VILLAGERS...

M-

GRAAAAR!!

CRASH

DUMP

WHEEZE...

WHEEZE...

I DIDN'T EXPECT YOU TO LAST THIS LONG.

IMPRESSIVE..

CRASH

WAAH!

WAAH...

DIIIIE!

BUT IT ALL ENDS NOW.

Right Ventricle
Contains venous blood carrying large amounts of carbon dioxide

WELCOME TO THE RIGHT VENTRICLE WE ARE UNDERGOING CONTRACTION WE ASK YOU NOT TO LINGER NEAR THE TRICUSPID VALVE

SO HEAVY

GAAH. I DROPPED MY HAAAT!

STAMPEDE

Pulmonary Artery
Blood vessels leading to the lungs.

PHEW.

IT'S JUST A SHORT STRAIGHT ROAD HERE EASY!

DIRECT PATH

JOSTLE

CO_2

Lungs
Here, red blood cells discard carbon dioxide and receive oxygen

オオオオオオ
ROOOOOARRR

オオ

オオ

WHOOA!

SO THAT'S WHAT ALVIOLI LOOK LIKE FROM FAR AWAY.

OKAY, NOW TO EXCHANGE GASES AT THE ALVEOLI.

WHOA!

NOW, LET ME ADD HIS CORPSE TO MY COLLEC-TION...

HEAVE-HO!

HEAVE-HO!

I DID IT! I WON! HAAH... HAAH...

BWA HA HA!

BASHOOM!

ゴシュッ

HEAVE-HO!

HEAVE-HO!

HEAVE-HO!

HEAVE-HO!

ゴゴゴ

GARUNA

GARUNA

GARUNA

GET IT FULLY OPEN!

TURN IT WITH EVERY-THING YOU HAVE!

WHA ?!

ゴゴゴゴ

ROAR

WE WON'T LET THEM PUSH US AROUND ANY MORE...!

WE'RE GOING TO PROTECT OUR OWN WORKPLACE!

ROAR RRR

WHAT... W- WATER?! NO, THIS IS—

SEBUM ?!

MISTER...

YOU WANT SEBUM? HAVE ALL YOU WANT!

GET IT OPEN! JUST GET IT OPEN!

HUH WHEEZE

HUH WHEEZE

GASP?!

GRK GURGH

GRK GURGH

CLICK

I HAVE TO GET OUT OF HERE.

TH-THIS IS NO GOOD! I'LL DROWN IN THIS MUCH SEBUM.

YOU ATE TOO MUCH SEBUM YOU SLOW CREEP!

RRR

HIII

RO

ARR

HIII

DIE, GERM SCUM !!!

GYAAAAAAH!

GWAUGH

BUBBLE

M-S-TER!

AAAAH!

OH NO

SIR WHITE BLOOD CELL FORGIVE US.

BRBL

BRBL

BRBL

WE DON'T KNOW WHAT BECAME OF THAT WHITE BLOOD CELL AFTER THAT.

WHITE BLOOD CELL

I SEE

LET'S LOOK THAT WAY!

CLAMOR

CLAMOR

WHERE COULD HE HAVE GONE ?

CLUNK

REACH!

HAAA

FWP

MISTER WHITE BLOOD CELL!!

UNTIL SOMEDAY IT FALLS OUT,

WE'LL PROTECT IT AND MAKE IT GROW...

THIS SINGLE HAIR THAT YOU SAVED FOR US..

THANK YOU ..

HUH?

...

TAKE THIS...!

HM?

H-HEY, MIS-TER...?

RSTL

CLAMOR

CLAMOR

THAT'S A NEUTRO-PHIL .. RIGHT?

HEY . WHAT IS THAT?

B.OOD CE.L..? HUH WHA..?

WHITE ..

AHEM!

KOFF

DID YOU HAVE A CAREER CHANGE ...?

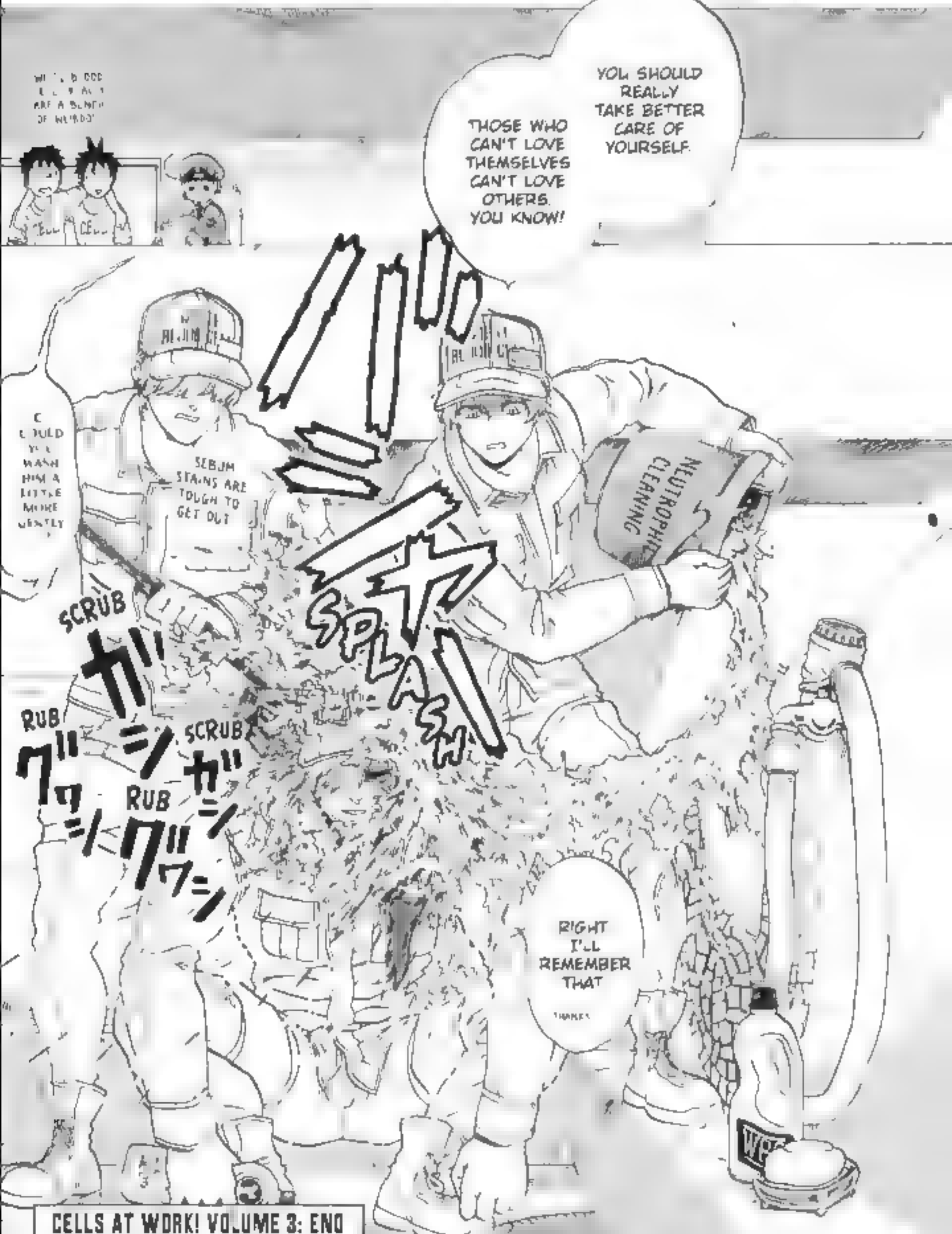
WELL IT'S A LONG STORY

CO2

OF MY THANKS!

A TOKEN...

CHAPTER 14: END



CELLS AT WORK! VOLUME 3: END

Medical Editor: Tomoyuki Harada

OKAY. BACK TO THE HEART.

OH, THIS IS WHERE WHITE BLOOD CELL FIRST SAVED ME..

HE'S ALWAYS SAVING ME

Alveoli
Where gases are exchanged

OXYGEN GAS

O_2

CO_2

Pulmonary Vein
Contains arterial blood carrying large amounts of oxygen

SO FAST!!

WHOOOOOOOOOOOOSH

Aorta
From the aorta, the blood branches out into arteries then to capillaries throughout the body

OKAY, NOW ALL I HAVE TO DO IS DELIVER THIS OXYGEN.

FLOP FLOP FLOP

Capillaries
Here blood cells drop off oxygen and nutrients and receive carbon dioxide and other unneeded chemicals

The route traveled so far

A-ALL RIGHT LET ME HELP

WHICH WAY IS RIGHT?

HELP! I CAN'T PUT THIS UP

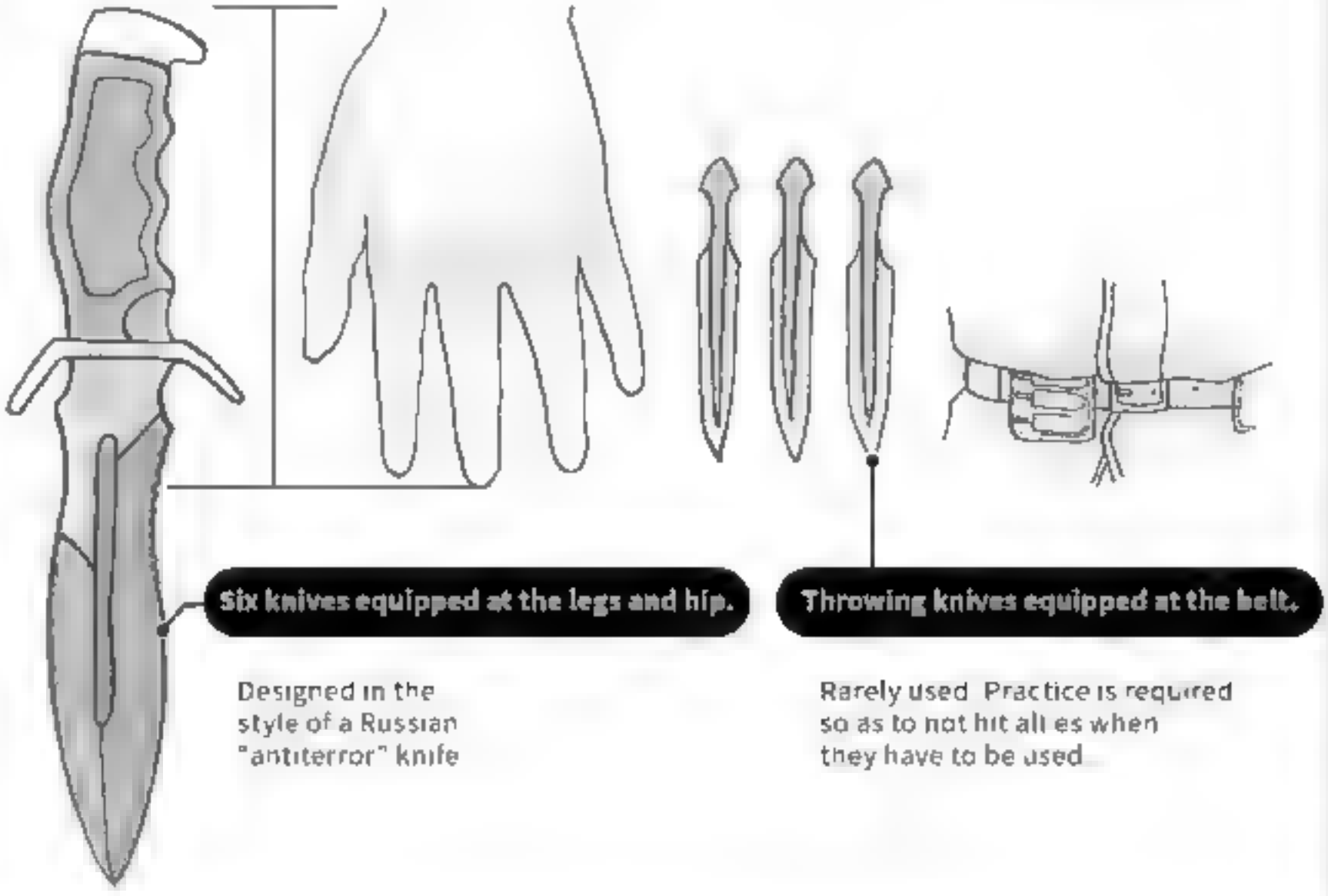
ROAD CLOSED

YOU HAVE THE PEN IN YOUR RIGHT HAND THAT WAY IS RIGHT THIS WAY

DETOUR ROUTE

HEY AH YOU SAY THAT THING YOU AT K- YOU GERMI

Knives (two types)



Six knives equipped at the legs and hip.

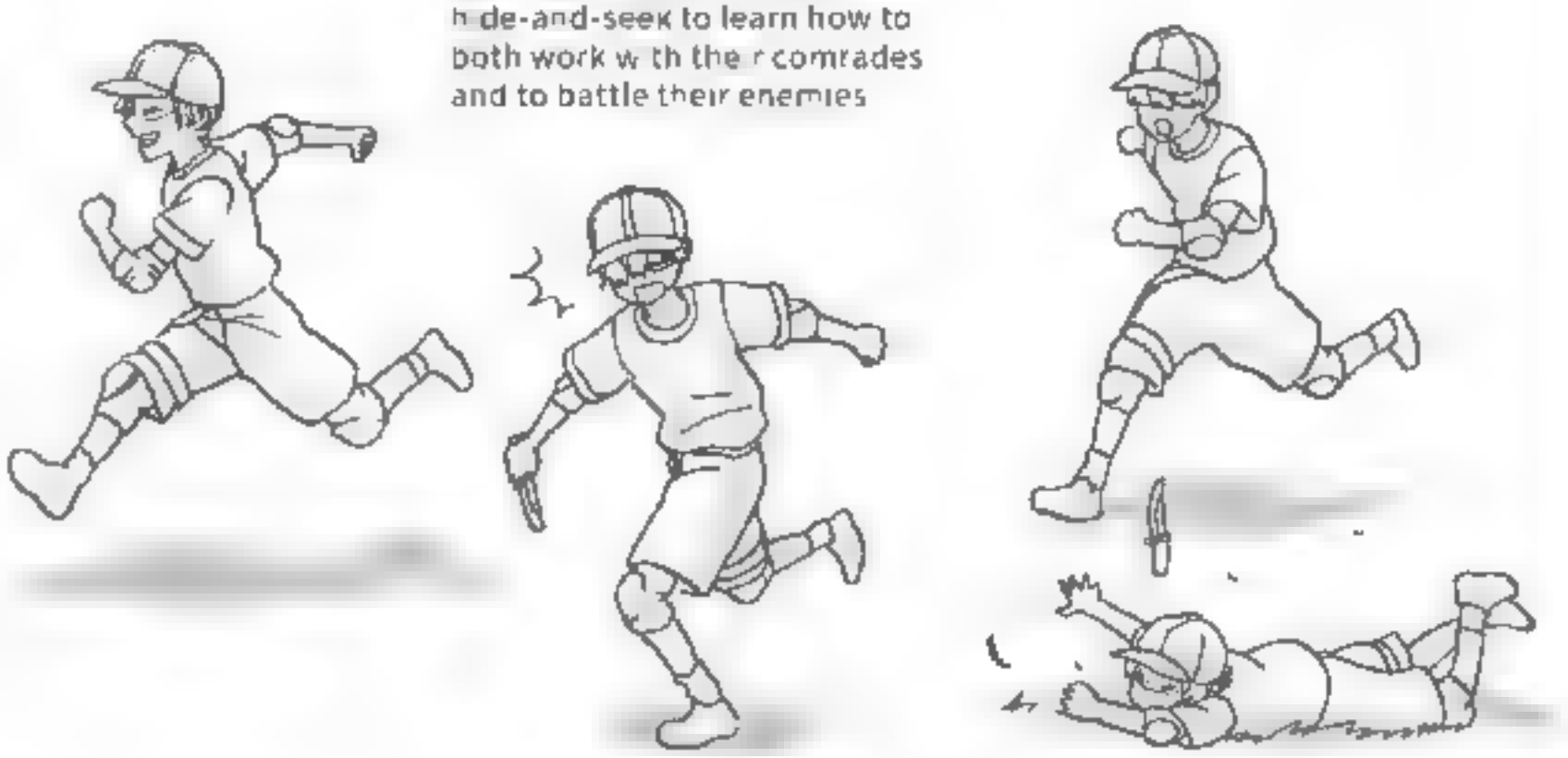
Designed in the style of a Russian "antiterror" knife

Throwing knives equipped at the belt.

Rarely used. Practice is required so as to not hit allies when they have to be used.

White Blood Cells and Their Friends

From an early age, white blood cells play swords, tag, and hide-and-seek to learn how to both work with their comrades and to battle their enemies



White Blood Cell (Neutrophil) [schematic illustration]

They wear white to represent purity and justice

Receptors

Reacts to bacteria and other enemies The ones assigned to neutrophils have a clunky design The range and volume can be adjusted but it cannot determine direction

Under their shirts, they wear a receptor and inner wear made of L-selectin

WBC (White Blood Cell) badge Velcro

Water-Resistant Plug

The receptor cables connected here There are two kinds of circuits; the Fc receptor and another for the C3 receptor

It zips on the side

L-Selectin Adhesion Molecule

Transceiver

Used to communicate with colleagues, the limbic system, and the headquarters of the blood forming organs

It responds to the floor (endothelial cells) to tether their bodies to the ground

Hydrolyzing Enzyme Spray

Breaks down bacterial corpses and other things

There's a switch on the inside of the belt

TIME TO CLAIM THAT OXYGEN FOR US BACTERIA!

RMBL

HEE HEE HEE...

HEH HEH HEH.

HEY HERE COMES A GOOD ONE.

WE'LL WAIT FOR IT HERE!

LOOM

ONCE IT TURNS THE CORNER, WE'LL BEAT IT UP TOGETHER!!

OUR TARGET IS THAT DOPEY RED BLOOD CELL

THUP

...

"SHHH"?

?

HUH?

...

...!!

SLASH

SLIDE

TH-THAT WAS CLOSE...!

PHEW

WHISTLE

WHISTLE

EASY PEASY♪

OH YOU GOT THE GERMS ALREADY

LET'S SEE—

PLOP

PLOP

WE APOLOGIZE FOR ANY INCONVENIENCE

SQUEEZE

SQUEEZE

BUT I'M ALMOST THERE—!!

WE APOLOGIZE FOR ANY INCONVENIENCE

G...GUH. SO THIS IS THE END OF THE CAPILLARIES. .!

N...NO ROOM. CAN'T BREATHE ..

SQUEEZE

SQUEEZE

PHEW THAT WAS TIGHT

SHINE

!

THANKS FOR COMING TO SUCH A NARROW STREET MUST HAVE BEEN A LOT OF WORK

NOT A PROBLEM. JUST DOING MY JOB!

TAKK

DING DONG

GUH!

SLIDE

OXY-GEN DELIV-ERY!

OH THANKS.

I DID IT...! FINALLY, I—

I CIRCULATED BLOOD WITHOUT GETTING LOST!

BLOOD CELL

YO!

.....

WAH HOOOOO!

CONTENTS

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NEVER MIND THAT THAT ONE. IS SHE THE RED BLOOD CELL YOU SHOWED AROUND THE OTHER DAY?

HUH? DID YOU

MAKE IT ALL THE WAY HERE ON YOUR OWN

AHEM!

SHE FINALLY DID HER JOB ALL ON HER OWN?

YES IT'S ALL THANKS TO EVERYTHING YOU TAUGHT ME.

KILLER T, WHAT ARE YOU DOING HERE...?

?

WHAT'S IT TO YOU?

Killer T Cells (Cytotoxic T Cells)

In the event of a foreign invasion, these cells act as commanders and decide the strategic response. They issue deployment orders for Killer T Cells.

JUST HOW INCOMPETENT IS SHE?

GRR

HEY! DON'T TALK ABOUT HER LIKE THAT

HUH?!

YOU AND I HAVE THINGS THAT WE DON'T DO TOO WELL.

FOR HER, "NOT GETTING LOST" HAPPENS TO GIVE HER TROUBLE.

. . . .

EVEN SO, SHE DID HER BEST TO OVERCOME HER WEAKNESS.

SHE HAD TO HAVE PEOPLE SHOW HER AROUND, AND SHE MADE PLENTY OF MISTAKES. BUT SHE NEVER GAVE UP.

EVEN AS SHE DOES HER JOB EVERY DAY, SHE STILL WORKS TO MAKE HERSELF BETTER.

I NEVER THOUGHT ABOUT IT BEFORE, BUT RED BLOOD CELLS HAVE A HARD JOB TO DO, TOO. .

THEY CARRY AROUND THOSE HEAVY LOADS AND RUN ALL OVER THE BODY

SHE'S REALLY SOME-THING...

WELL. GOOD FOR YOU. BABY STEPS'

SOB' THANK YOU SO MUCH

PLEASE DON'T PINCH

CONGRATS OR WHATEVER

YOU KNOW KILLER T— THE RED BLOOD CELLS ARE SOMETIMES SCARED OF US IMMUNE CELLS.

BUT WOULDN'T IT BE GREAT IF WE COULD UNDERSTAND EACH OTHER'S JOBS—

SO THAT ONE DAY, WE CAN ALL LIVE AS FRIENDS?

DON'T YOU THINK SO TOO?

LL
WHACK

YOU IDIOT !!!

HOW MUCH LONGER WERE YOU GONNA BLAB THAT CRAP IF I DIDN'T STOP YOU?!

WH- WHAT? HUH?!

?!

HUH?! HUH ...?!

YOU SPINELESS FOOL! I DON'T WANNA HEAR THAT NAIVE GARBAGE EVER AGAIN!

WE'RE KILL-ERS!!

WHITE BLOOD CEL

UH HUH? SURE.

I- I NEVER WAS THINKING THAT SPECIFI-CA—

THAT'S WHAT IMMUNE CELLS DO!!

LISTEN UP, Y'HEAR?! WE K EVEN OUR FELLOW CELLS F WE NEED TO!!

DID YOU HEAR WHAT I SAID?!!

UH. YESSIR?

SQUA

YOU BETTER KEEP *THAT KNIFE IN YOUR SOUL* SHARPENED SO YOU CAN USE IT ANY TIME!!

I REALLY HAVE TO EXPLAIN THIS?!

YOU WANT TO JUMP INTO A GROUP OF NEIGHBOR CELLS PLAYING CARDS AND PULL THE OLD MAID AND HAVE THEM SAY "*HAH HAH!*" AND TEASE YOU?

YOU WANNA BE FRIENDS ?!

YOU WANNA JO N N WHEN THE RED BLOOD CELLS SIT DOWN FOR TEA?!

WHERE'S YOUR DAMN PRIDE, HUH?!

WHOOOSH

AND I'M SO FULL OF MYSELF FOR JUST DOING MY JOB RIGHT ONCE. .

WHITE BLOOD CELL IS WORKING HARD EVERY DAY, PUTTING HIMSELF ON THE LINE LIKE THIS.

OH, LOOK AT ME.

HALT

NO, DON'T WORRY ABOUT IT

DOESN'T EVEN HURT ANY MORE

DO YOU IN A BANDAGE

BUT WHAT'S THIS ABOUT DOING YOUR JOB ON YOUR OWN?

WHAT HAPPENED TO YOU?!

YOUR CHEEK

A GERM ?!

IT WAS KILLER T NO. A RANDOM ASSAIL ANT I MEAN, A BACTE-RIUM

-IT'S NOTHING.

OH, WHITE BLOOD CELL!

YOU'LL NEVER BELIEVE WHAT HAPPENED!

I FINALLY DID MY JOB ALL ON MY OWN TODAY— WAIT—

AE ?

I WANT TO HEAR ALL ABOUT IT.

ALL ABOUT THE WORK YOU GUYS DO.

W-WELL, YOU SEE.. AFTER I RAN INTO YOU...

OH AND I DROPPED MY NOTES AT THE HEART. BUT FOR SOME REASON THEY CAME FLYING AT ME FROM BEH.ND.

AND THEN I WENT TO THE LUNGS. AND THE ALVEOL. WHEN YOU LOOK AT THEM FROM THE OUTSIDE THEY WERE ALL LUMPY. AND THEY HAVE THIS FUNNY SHAPE!

UH-HUH.

OH REALLY?

"LUMPY"

AND THEN. AND THEN...

...THE FIRST PLACE I WENT WAS THE VENA CAVA! IT'S HUGE. BECAUSE THAT'S WHERE ALL THE VE.NS END UP.

UH-HUH

AND THEN I WENT TO THE HEART! I WAS PUSHED AROUND EVERY WHICH WAY. IT WAS REALLY TOUGH! I WAS SQUISHED!

UH-HUH

I'M NOT JEAL-OUS. . AT ALL!!

GR!

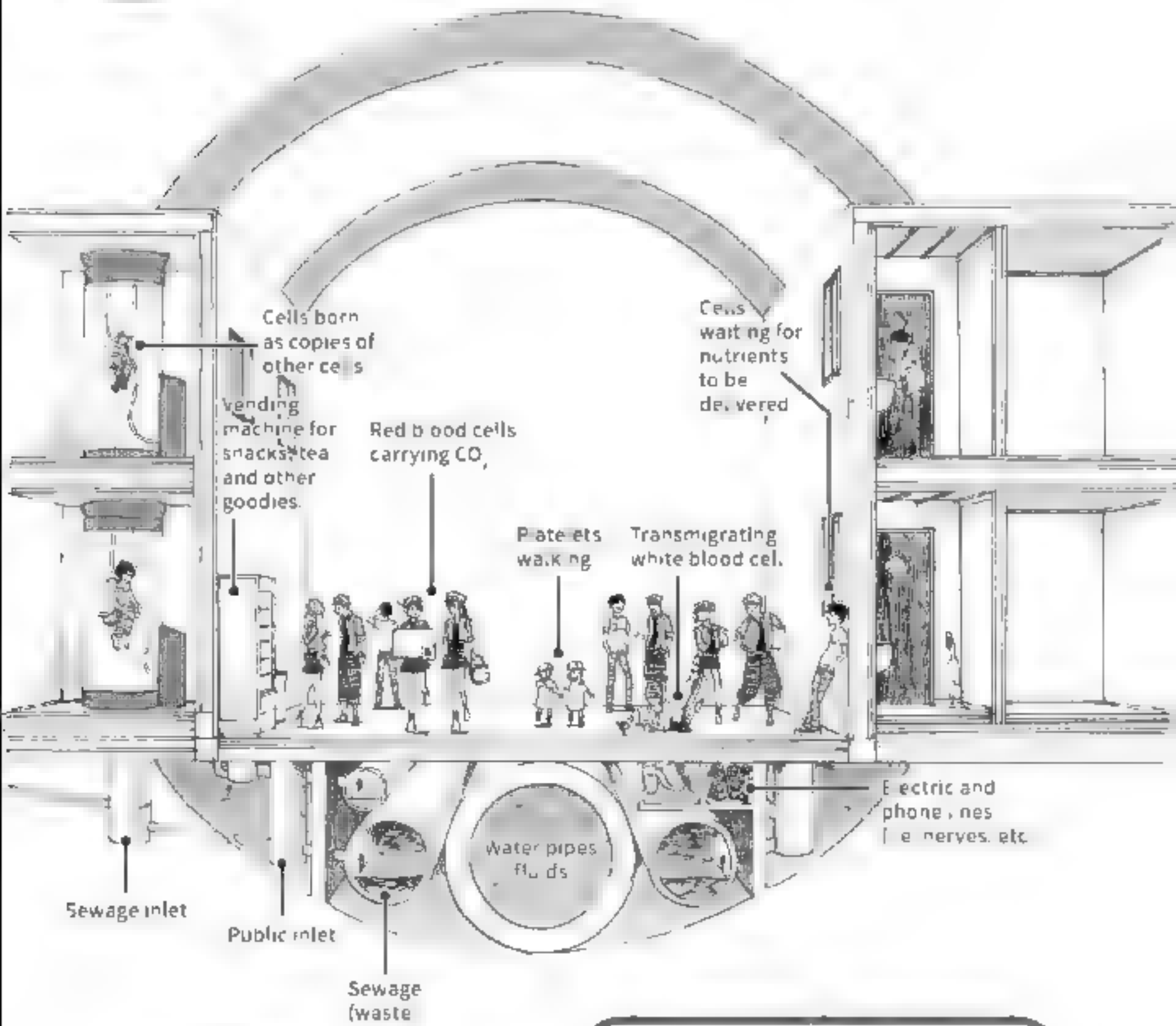
あい CHAT

あい CHAT

CHAPTER 10: END

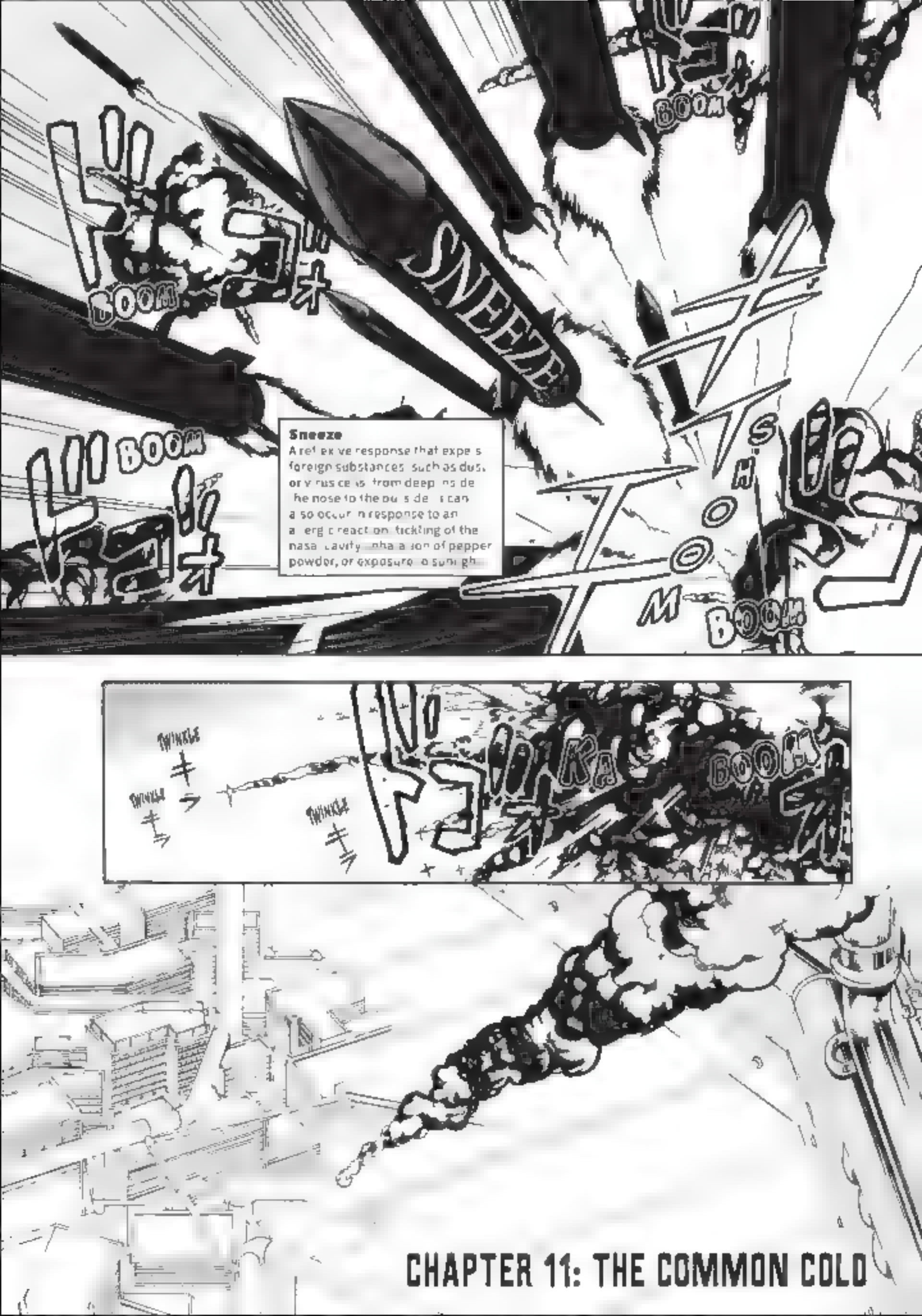
This is a fictitious setting for this manga and does not reflect scientific fac

Cells at Work! Inside a Blood Vessel [cross section]


Cells born as copies of other cells
Cells waiting for nutrients to be delivered
Vending machine for snacks, tea and other goodies
Red blood cells carrying CO2
Platelets walking
Transmigrating white blood cells
Electric and phone lines (nerves, etc.)
Water pipes (fluids)
Sewage inlet
Public inlet
Sewage (waste)

Red blood cells like sugars

Unlike white blood cells and other cells, red blood cells lack mitochondria. Because of this, they can only utilize glucose for energy.



Sneeze
A reflexive response that expels foreign substances such as dust, or virus cells from deep inside the nose to the outside. It can also occur in response to an allergic reaction, tickling of the nasal cavity, inhalation of pepper powder, or exposure to sunlight.

CHAPTER 11: THE COMMON COLD

Killer T Cells (Cytotoxic T Cells)
Deployed on the o de of a Helper T Ce Professiona ki ers who recognize and destroy fore gn substances such as transplanted cel s virus infected cel s and cancer cells

LISTEN UP!! IT'S COLD SEASON!!

Cold
A so ca d the common cold a term used ro describe the nflammat on of respiratory organs ,acute upper respirato y nf ammation and re a ed symptoms caused by the co d v rus The nf amma on causes symptoms such as sneez ng runny or stuffy nose achy throat ph egm and fever

SIR, YES SIR!

UGH, NOT AGAIN.

AND THIS AREA, NEAR THE PHARYNX, IS ESPECIALLY VULNERABLE TO ATTACKS FROM VIRUSES!

IF YOU SEE AN INFECTED CELL, AS SOON AS THE ORDER IS GIVEN, YOU ARE TO KILL IT—WITHOUT FAIL!!

DO THEY HAVE TO BE SO LOUD EVERY DAY?

SIR, YES SIR!

I HAVE TO BRING CARBON DIOXIDE TO THE LUNGS, PICK UP OXYGEN, AND DELIVER IT TO CELLS THROUGHOUT THE BODY.. THAT'S MY JOB!!

GLAMOR

CO_2

EVERYONE'S BEEN CALLING ME A DUMMY OR TELLING ME I HAVE ZERO SENSE OF DIRECTION ..

..BUT IF I KEEP ON WORKING LIKE A NEWBIE FOREVER, I'LL JUST SLOW EVERYONE ELSE DOWN.

YOU'RE STILL A NEWBIE AND YOU GO STICKING YOUR NECK IN OTHER PEOPLE'S BUSINESS!

PLEEEASE MS MACRO PHAGE

Red Blood Cell
She transports oxygen and carbon dioxide through blood circulation

I HAVE TO STOP RELYING ON OTHER CELLS!

CO_2

SIGH. . ALL RIGHT, THEN...

BETTER GET TO WORK.

ウォーン VRRRM

ウォーン VRRRM

CELL

TSK THEY'RE TALKING ABOUT KILLING US NORMAL CELLS LIKE IT'S NOTHING.

GOD DAMN YOU RAAAAAAAAAA

JUST BECAUSE THEIR JOB'S A LITTLE DIFFERENT FROM THE REST OF US..

THEY THINK THEY'RE SO SPECIAL.

ウォーン VRRRM

ウォーン VRRRM

ウォーン VRRRM

ウォーン VRRRM

CELL

...THE REST OF US NORMAL CELLS

...SURE HAVE BORING JOBS...

COMPARED TO WHAT THOSE IMMUNE CELLS DO. .

WHIRRRR

CLINK TINK TINK TINK TINK

THEN I ROOM WITH HIM AND TEACH HIM STUFF UNTIL HE'S READY TO GO OFF ON HIS OWN AND THE SAME THING OVER AND OVER, FOREVER ?!

VRRRM

VRRRM

SORTING MY STUFF AND THE COPY'S STUFF, THEN TYING THEM UP SEPARATELY

Equatorial Plane

GLUB コポ

WE JUST MAKE BORING COPIES OF OURSELVES, DAY AFTER DAY

GLUB コポ

Cell Division

A process by which a single cell divides into two or more cells. A cell copies its own DNA during interphase and then divides during mitosis. The duration between cell divisions marks a single cell cycle. The number of times a cell can divide in its female depends on its type.

ISN'T THERE ANYTHING COOL GOING ON...?

レオ!! BO

ンン MF

MAN, EVERY-THING IS SUCH A DRAG.

THE VIRAL THREAT !

TOSS

KCHAK

KEH KEHHH !

KEH KEH

カチ

THMP トタ

TMP トタ

KEH KEH KEH KEH...!

RISE

HM?

KEH KEH?!!

KEH KEH KEH...

C'MERE コイ

C'MERE コイ

CELL

KEH KEH KEH!

SNEAK コソ

HEY... WHAT'RE YOU DOING?

KEH KEH!

"CELL"?

KEH! KEH KEH KEH!

HE'S WEARING A STYLISH HAT...

COME! COME!

AND HE LOOKS A LITTLE SINKY.

NOW GO WASH YOUR HANDS AND GARGLE, MAGGOTS!

SIR, YES SIR!

ALL RIGHT! THAT'S ENOUGH TRAINING FOR TODAY!!

SNEAK

WE FOUND THIS DELIVERED...

HUH?

SQUAD LEADER!! TAKE A LOOK AT THIS!

OH...IT'S THOSE LOUD GUYS!!

"THANK YOU FOR YOUR HARD WORK," IT SAYS...

Thank you for your hard work ☆

A PRESENT ...?

I-I CAN'T EXPOSE YOU GUYS TO DANGER...!

I'LL OPEN IT

N-NO, IDIOT! GIVE IT HERE!!

S-SQUAD LEADER!

YOINK

PLEASE BE CAREFUL!

WHAT..? A PRESENT?!

IT COULD CONTAIN HAZARDOUS MATERIAL SIR.

WE'LL OPEN IT OVER HERE...

KEH KEH KEH!

ZOOM

!

N-NOT THAT I WANTED ONE OR ANYTHING, BUT THEY KNOW HOW TO CHARM A GUY.

GIDDY GIDDY

HEH HEH HEH. . SO...

UNWRAP

WHACK

PFFT! HA HA HA HA HAAA!!

KEH KEHHH! KEH KEH KEH KEH!

CELL

WHOOSH

KEHHH KEH KEH KEH!

STOP RIGHT THERE! I'LL KILL YOU DEAD, YOU STUPID CELLS!!!

AH HA HA HA!

WHOOP, LET'S GET OUT OF HERE!!

DASH

TMP TMP TMP TMP TMP

WERE'N'T YOU A BIT CARE'N' OF SQUAD LEADER

WHY, YOU.

AH HA

HA HA HA HA

OH HO HO HO

BUT AS SOON AS WE GET THE ORDER TO DEPLOY, YOU'RE DEAD MEAT!!

YOU MIGHT BE FAST...!

MEH!

SUUNOOOOO

MEE!

LYMPH DUCTS AHEAD →

GUH . DAMN IT

TSK ...!

JUST YOU WAIT!!

KEH KEHH!

HA! DID YOU MAKE THAT THING YOURSELF? JUST FOR THAT PRANK?

HAAH HAAH THAT WAS CLOSE

IS THAT SERIOUSLY ALL YOU CAN SAY ?

"KEH KEH"...

KEH KEH KEH!

ALL RIGHT LET'S HAVE SOME MORE FUN!!

HUH? WE'RE NOT DONE?

YOU'RE FUN, MAN!!!!

KEH KEHH!

DING DONG! ♪

OH.

HEH HEH HEH. WHAT'S OVER HERE..?

WOMP WOMP

NO ONE

MY RECEPTOR JUST REACTED, BUT.

?!

Receptor
Works like radar to detect bacteria and other bodies

HE'S LOOKING FOR SOME-THING..

NRRH

TH-THAT'S A WHITE BLOOD CELL.. YEEESH.

SNEAK

I-S HE AFTER US?!

KEH KEH!

YOU WANT ME TO WATCH?

HUH?

CELL

GLARE

White Blood Cell (Neutrophil)
His main job is to destroy foreign substances that enter the body from the outside, such as bacteria and viruses

TURN
DASH
WOMP WOMP
?!
DING DONG ♪
すすすす
SLIIIIDE
TURN
DASH
WOMP WOMP
?!!
DNG DONG ♪
JUMP
すた
TWIST くね
TWIST くね
TURN
?!
DASH
TURN
TURN
?!
WHITE BLOOD CELL
DNG DONG ♪
WHA-?
?
JUMP
すたっ

GLARE

HEY, YOU THERE !!

!

!!

CRAP!!

JOLT

PFFT

DING DONG! ♪ DING... DIN...

DAMN IT! WHERE IS IT..?!

THERE'S AN ENEMY NEARBY!!

EEEK!

CAN'T HEAR YOU

GET CLOSE TO ME FOR YOUR OWN...

SAFE-TY HUH?

WOMP WOMP

WHOOOSH

BREAK ROOM

TEE HEE HEE

POUR

POUR

SUGAR

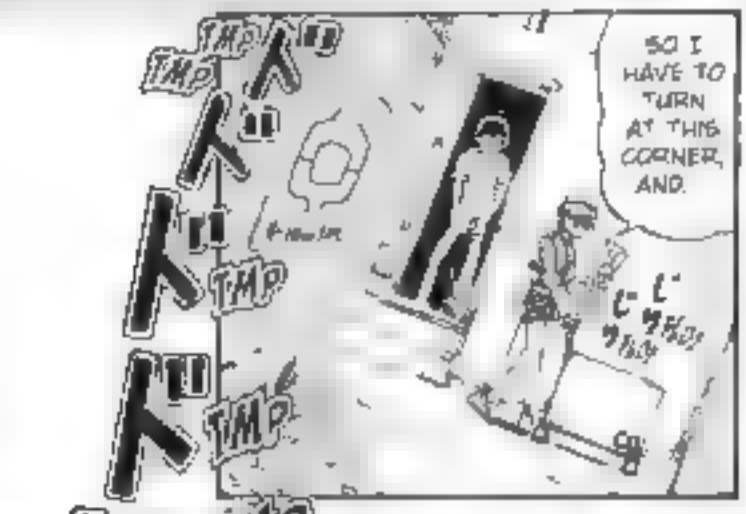
SALT

BAM

LET'S GO PRANK SOME MORE CELLS!!

BWA HA HA HA! THIS IS FUN!

CHAPTER 10: THE CIRCULATORY-SYSTEM



Superior vena cava
Lung
Aorta
Inferior vena cava
Heart
Current location
I'M JUST IN FRONT OF THE INFERIOR VENA CAVA, SO...
ALL I HAVE TO DO IS TO GO FROM THE INFERIOR VENA CAVA, TO THE HEART AND TO THE LUNGS, THEN BACK AGAIN!

NO PHYSICAL LABOR, NO DANGER

AND WE CAN HAVE DELICIOUS TEA ANY TIME

AHHH OFFICE WORK IS THE BEST, DON'T YOU THINK, REGULATORY T CELL?

YOU THINK SO?

SHOOT SOMEONE'S HERE! GO. GO!

HEH HEH HEH!

KEH KEH!

Helper T Cell
In the event of a foreign invasion, these cells act as commanders. They determine the appropriate strategic response based on the intelligence on the nature of the invaders. They issue deployment orders to Killer T Cells.

SPURT

KCHAK

DO

AND WHO SWITCHED THE SALT AND SUGAR?!

THAT'S WHAT I WANT TO KNOW

DID YOU SEE AN ANTIGEN IN HERE?!

BWA HA HA!

Regulatory T Cell
Controls the activity of T cells to prevent them from triggering anomalous immune responses.

HEY DO YOU HAVE A TISSUE?

HEY YOU!

DAMN! I WAS TOO LATE!

DASH

I HATE HOW THOSE IMMUNE CELLS ARE SO FULL OF THEMSELVES, AND VIOLENT, TOO! PICKING ON THEM WAS SO MUCH FUN!

HA HA HA

BUT I SHOULD GET BACK TO WORK SOON.

KEH KEH KEH!

AH HA HA! BOY, THAT WAS FUN!!

BY THE WAY HOW DID YOU COME UP WITH ALL THOSE PRANKS?

WHY NOT? SIT DOWN FOR A CUP OF TEA WITH ME.

IT'S LIKE YOU AREN'T SCARED OF ANYTHING. AREN'T YOU AFRAID OF GETTING IN TROUBLE?

ZOOM

KEH KEHH!

HUH? YOU WANNA COME OVER?

VRRRM

SO I DON'T HAVE ANY FRIENDS, AND I HAVE NO IDEA WHAT KIND OF CELL ANYONE IS

CLUB コポ

CLUB コポ

VRRRM

I ONLY JUST STARTED LIVING ON MY OWN.

WE SHOULD HANG OUT MORE, IF YOU'RE OKAY WITH THAT.

PUSH ずっ

KEHH?

...CELL

IS IT, A HAT?

HUH .? WHAT'S THIS?

KEH KEH?

THAT HAT S PRETTY COOL.

BY THE WAY, WHAT KIND OF CELL ARE YOU?

KEH KEH KEH!

ゴソ REACH

CELL

ずDD

-PUSH

GROW

KEH KEH KEH!

KEH KEHHH!

NO REALLY. HOLD ON

NO THANKS. I CAN'T TAKE THIS. HEY

OH, FOR ME?

HUH? YOU WANT ME TO WEAR IT?

KEH KEHH! KEH KEHH!

ずい PUSH

ずい PUSH

KEEEEEEH

AAAUGH!

H-
HELP...

WAH

WAH

ガタ
ガタン
RATTLE
RATTLE

WHOA!
AAALIGH!

ROCA
ROCA

AUGH!

THEY'RE
ALL OVER
THE
PLACE?!!

WHAM

HUH?!

WHAM

KEH KEH!

THUD

BANG

BANG

KEH KEHHH GEH KEH KEH KEH!

STAY AWAY FROM THE DIVIDING MACHINE!

ARE YOU TRYING TO TAKE IT OVER?! HEY!

CELL

WHAM

S-STOP!

WHAM

CELL

YOU-YOU'RE ...!

AH!

HE WAS JUST TRYING TO USE ME...

JUST WHEN I THOUGHT I'D FINALLY MADE A FRIEND...

A VIRUS-IN-FECTED CELL!

KEH KEH!

S-STOP IT!

PLEASE STOP!

CELL

YOU GOT ME GOOD EARLIER.

GRIP

OH—

KILL
IT'S PAY-BACK TIME, YOU CREEP !!!

WHACK

WHAM

RRRRH!

SMAASH

AAAUGH!

WHOA WHOA WHOA!

GAAAE

EVACUATE WITH THE OTHERS!

AAAUGH!

PEWWWWW

CATCH

DING DONG

HMPH.

KEH KEH

ARE YOU CONFUSED THAT WE'RE HERE?

LOOKS LIKE I'M FINALLY ON TIME.

...?!

THMP

THMP

THMP

THMP

THMP

EEEEEK?!

I'LL STAB ANYONE WHO GETS IN MY WAY!!

OH NO... THIS IS THE END. .I'M GOING TO BE STABBED AND HEMOLYZED. .

GONNA DIE

Hemolysis
When red b ood cel s are dest oyed

WHY DOES THIS STUFF KEEP HAPPENING AROUND ME? I JUST BARELY DECIDED THAT I WAS GOING TO WORK EXTRA HARD...

WE ANALYZED THE RNA YOU LEFT ON THIS, IDENTIFIED THE ANTIGEN, AND GOT PERMISSION TO DEPLOY!

YOU FORGOT THIS!

KEH KEHHH?!

RNA (Ribonucleic Acid)
Consists of four bases: adenine, guanine, cytosine, and uracil. RNA plays many roles in protein synthesis inside the cell. Some viruses store the genetic information in RNA.

WHY DON'T YOU ALL—

THAT'S NOT GONNA WORK ON US!

KEEH!

HAAA

KA-
!!!
BOOM
DIE, YOU INFECTED BASTARDS !!!
KEEEEEH !!
WOMP WOMP WOMP
WE'RE DONE ALREADY.
BAM
ANTIGEN SIGHT—

MY COPY! I'M SO GLAD YOU'RE ALL RIGHT! I'M SO HAPPY!

?

THE VIRUS WAS IDENTIFIED AS A RHINOVIRUS, A CARRIER OF THE COMMON COLD.

Rhinovirus

A representative carrier of the common cold. In most cases, causes slight respiratory symptoms, runny or stuffy nose, sneezing. The saliva and mucus of an infected person contain a large number of rhinoviruses, and are highly infectious.

CELL

IF YOU'D BEEN INFECTED, WE'D HAVE KILLED YOU WITH THE REST!! YOU LUCKED OUT!! PEH!!!

MAN! YOU SURE CAUSED US A WHOLE TON OF TROUBLE!! MORON!!

SQUEEZE ONE

SQUEEZE

YOU SHOULD LEARN MORE ABOUT VIRUSES AND CELLS.

AND DON'T PLAY PRANKS ON OTHERS!

I'M SORRY ...

GLOOM しゅん

Y- YES, SIR.

A FEW DAYS LATER

YOU FUNNY GUY WITH THE COOL HAT

AND GOOD BYE

OH, SQUAD LEADER!

WE WERE BORED, SO WE JOINED IN

HEY, WOULD YOU LIKE TO JOIN US?

CELL

KILL

CHAPTER 4

WH- WHAT'RE YOU GUYS DOING?!

HEY HEY HEY

CHAPTER 5

WELL, WE'RE NEIGHBORS, SO I THOUGHT WE SHOULD HANG OUT...

UH!

H- WHA?

I DO THE KILLING! AND YOU MIGHT BE KILLED BY ME! WE HAVE TO SET BOUNDARIES...

WE'VE HEARD THAT A MILLION TIMES ALREADY, SQUAD LEADER

SURE WHAT EVER.

TWITCH ピク

Y-YOU IDIOT! WE'RE KILLERS, DON'T YOU GET IT?! WE DON'T "HANG OUT"!!

DRAG

HEY, GUYS STOP!

STOP BEING SO UPTIGHT SIR! SOCIALIZING IS IMPORTANT, TOO.

TRA

TRA

TIYEAAH!

TSK

JUST THIS ONCE. GOT THAT IDIOTS. ?

TAKE THAT!!

YEAH YEAH

WA HA HA HA!

WHOA!

OOOH, THAT LOOKS FUN!

POP

FINISH HIM!

YEAH, GET HIM!

KILL

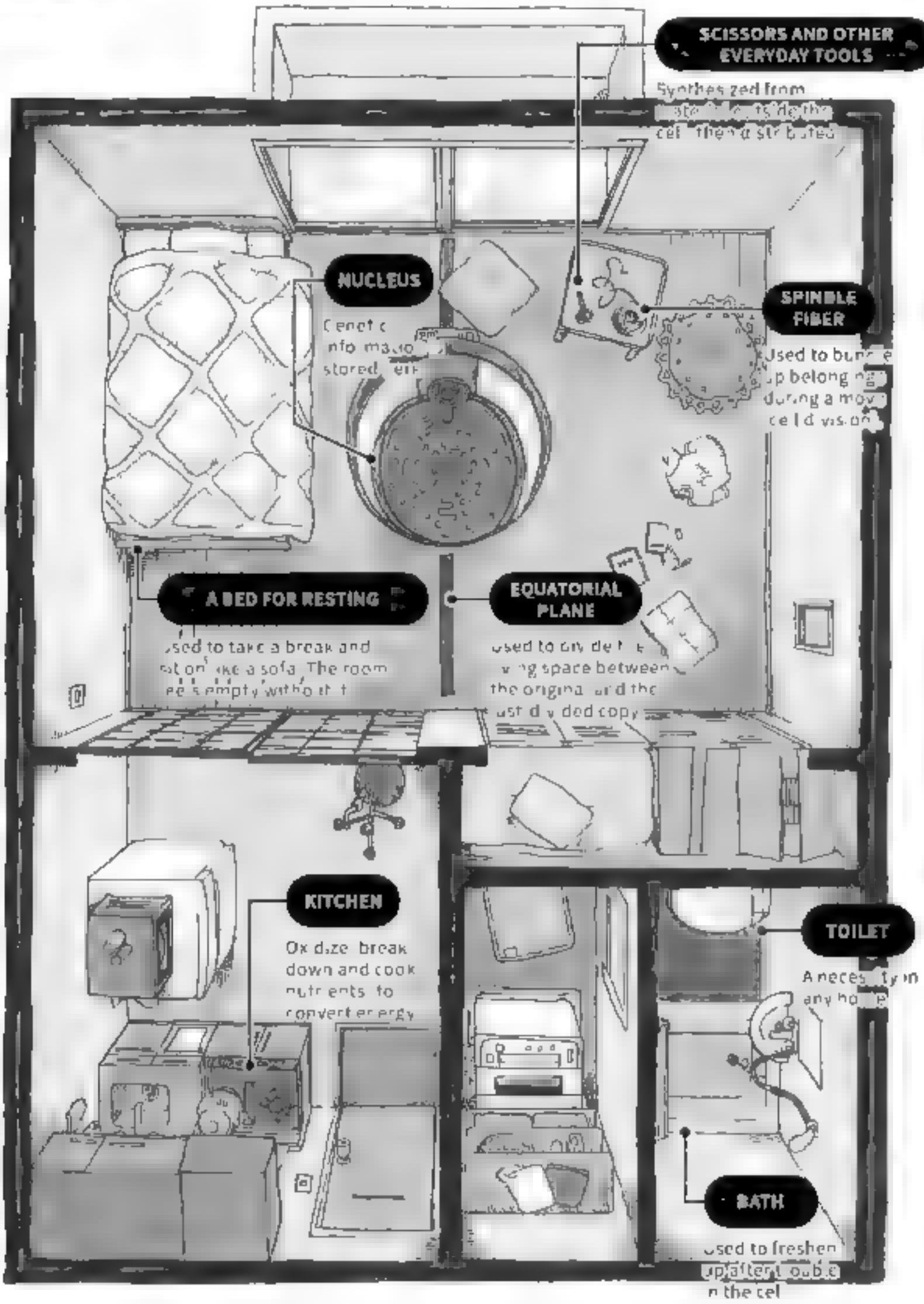
KILL

HOW'D I GET STUCK KEEPING SCORE...?

CHAPTER 11: END

*This is a fictitious setting for the manga and does not reflect scientific act

The Apartment of an Ordinary Cell (floor plan)


SCISSORS AND OTHER EVERYDAY TOOLS
Synthesized from
NUCLEUS
Genetic info mation stored
SPINDLE FIBER
Used to bundle up belong ngs during a move cell division
A BED FOR RESTING
Used to take a break and rest on like a sofa. The room is empty without it
EQUATORIAL PLANE
Used to divide the growing space between the original and the just divided copy
KITCHEN
Oxidize, break down and cook nutrients to convert energy
TOILET
A necessity in any home
BATH
Used to freshen up after cell doubles in the cel

Cells at Work!

はたらく細胞

T CELLS, THEY ARE MIGHTY BOLD♪

I DON'T KNOW BUT I'VE BEEN TOLD♪

THUMP

THUMP

T CELLS LIKE TO KILL GERMS DEAD♪

I DON'T KNOW BUT IT'S BEEN SAID♪

THUMP

THUMP

THUMP

THUMP

CHAPTER 12: THYMOCYTES

HEY, PICK IT UP, YOU FEET-DRAGGING MAGGOTS!

KILLS

ALL RIGHT, MAGGOTS— TIME FOR SOME DRILLS!

SIR, YES SIR!

Killer T Cells (Cytotoxic T Cells)
Deployed on the order of a Helper T Cell. Professional killers who recognize and destroy foreign substances such as transplanted cells, virus infected cells and cancer cells.

NATIVE
HEEEEEEY!
たたたたた
THUMP THUMP THUMP
NGH!
SLAM
AAAAH!

RAAAH
SIR, YES SIR!
WE DON'T NEED WIMPS N THE T CELL SQUAD!!! T CELLS ARE THE LAST RESORT OF THE IMMUNE SYSTEM! DO YOU TAKE THAT SERIOUSLY, MAGGOTS!!?!
YOU THINK A LAST RESORT CAN BE WEAK?! TRAIN HARD, YOU MORONS!!!
SIR, YES SIR!

SIR, NO SIR!
IS THERE NOTHING BUT WEAK-ASS CELLS IN THIS OUTFIT?! YOU THINK T CELLS ARE A JOKE?!

WHAT ?!

YOU RAN AROUND IN FRONT OF ME?!

SLIDE

DIE, GERM !!!

GYAOOOT!

SLASH

I'M GOING TO CLOSE THIS WINDOW

ANTIGENS?

PAAA

IT SPOILS OUR PRECIOUS TEA BREAK— DON'T YOU AGREE. REGULATORY T CELL?

BUT WE'RE NOT ON TEA BREAK RIGHT NOW— OH LOOK

IF YOU SAY SO, SIR.

Helper T Cell
In the event of a foreign invasion, these cells act as commanders and decide the strategic response. They issue deployment orders for Killer T Cells.

UGH, THEY'RE SO LOUD AND SWEATY

WE CAN HEAR THEM ALL THE WAY OUT HERE.

Regulatory T Cell
Controls the activity of T cells to prevent them from triggering anomalous immune responses

SMASH

KILLER T CELL ..

UH-OH. YOU HIT THE COMMANDER

DOPS, SORRY COMMANDER I PUT A LITTLE TOO MUCH INTO THAT THROW.

NAIVE

ARE YOU OKAY

GRR

YOU'RE THE ONE WHO'LL BE IN TROUBLE IF WE'VE ONLY GOT WIMPS FOR FIGHTERS. . WOULDN'T YOU AGREE?

JUST DOIN' MY JOB. SIR. I HAVE TO TRAIN THEM SO THAT WE'RE READY WHEN YOU GIVE US THE ORDER

CAN'T YOU DO YOUR JOB A LITTLE MORE CALMLY? BUT I GUESS YOU NEVER COULD THINK ABOUT DOING THINGS EFFICIENTLY COULD YOU?

I'VE WANTED TO SAY THIS FOR A WHILE. LOOK...

THE MOST IMPORTANT PART OF TRAINING IS TO BUILD THEIR SPIRIT YOU CAN'T TEACH GUTS FROM A MANUAL!!

KI

YOU ALWAYS WERE CLUMSY.

WHAT'RE YOU TALKING ABOUT?

DON'T THROW YOUR TRAINEES MY WAY

I'M JUST ASKING YOU TO THINK ABOUT YOUR APPROACH!

HUH—?!

HA HA. YOU WANT TO KNOW?

Dendritic Cells
These cells take fragments of bacteria cells and virus infected cells, presenting them as antigens for other cells in the immune system. They're also involved in the development of T cells

WHAT'S THE DEAL BETWEEN THE TWO OF THEM? THEY'RE NOT BOSS AND SUBORDINATE

WH-WHAT'S GOING ON?

IT CAN'T BE?!

WHA ?!

THOSE TWO—

THEY WERE IN THE SAME GRADUATING CLASS AT THYMUS SCHOOL.

HE'S GET-TING BEAT UP?!

KILLER T SENPA IS SO THIN!

TH-THE ONE N THE GLASSES.

IS THAT COMMANDER HELPER T..?! HE SEEMS SO FULL OF SPIRIT?!

H-HE'S CRYING.

JUST LIKE US

THEY SURE DO, DON'T THEY?

THEY SEEM TOTALLY DIFFER-ENT NOW!

BUT YOU SEE, THOSE TWO—

I DON'T KNOW BUT IT'S BEEN SAID♪

T CELL TRAINEES KILL GERMS DEAD♪

THYMUS

Thymus
A lymphoid organ that differentiates and matures precursor T cells into fully fledged T cells.

...IS WHERE WE FIND OUT WHICH OF YOU WE CAN USE, AND WHICH ONES WE CAN'T!

THUMP

THUMP

THUMP

WELCOME TO HELL, YOU USELESS RUNTS!!

LISTEN UP! THE THYMUS...

Thymocytes
Precursors of T cells

DRAG

T.H.

WE DON'T NEED BLOCKHEADS THAT CAN'T DO THEIR PART WHEN THE TIME COMES!

ALONG THIS COURSE, CUTOUTS OF CELLS WILL POP UP!

CELL

Antigen Cutouts

CELL

Ordinary Cell Cutouts

ATTACK THE ONES YOU THINK ARE ANTIGENS!

ANYONE WHO ATTACKS ORDINARY CELLS AND ANYONE WHO DOESN'T ATTACK A SINGLE ANTINGEN WILL BE FAILED ON THE SPOT!!

Thymic Epithelial Cells
Cells tha make up the thymus. They nurse lymphocytes and help the differentiation of T cells.

THIS WILL DETERMINE IF YOU CAN RESPOND TO ANTIGENS OR NOT!!

YOU'LL START BY TAKING A TEST!!

HAAH! HAAH!

NOW SHOW ME WHAT YOU'VE GOT!!

ONLY 2 OR 3 PERCENT OF YOU WILL MAKE THE CUT!!

GUH

HEAD

NGH ?!

HUH? IS THAT ...?

RUSTLE

COULD THAT BE AN ANTIGEN CUTOUT?!

ALL RIGHT!

YAAAAAH!!

SM

ASH

W-WHOA. WHO IS THAT GUY?

HE BROKE THE CUTOUT IN HALF

ALL RIGHT GOOD JOB!!

OH... SORRY ABOUT THAT I USED YOU FOR FOOTING.

THAT WAS THE FASTEST WAY TO THE CUTOUT.

I THINK WE'LL HAVE TO BE AT LEAST THIS FAST TO BECOME FULL-GROWN T CELLS.

ズキ

ズキ

THROB

THROB

H-HEY! I SAW IT FIRST!!

AND YOU STEPPED ON MY HEAD..

FLICK

WAH!

CAN YOU NOT MAKE ME USE ENERGY NEEDLESSLY?

WH- WHY YOU—

HM?

SLAP

OUCH!

ACHE

GUH... GUH... GNNH ...

D-DID THAT FINGER FLICK REALLY HURT THAT MUCH?

LEAVE HIM WHY WASTE ENERGY HELPING HIM?

T.E.C.

..IN THIS CLASS OF CADETS. .

THERE SEEMS TO BE A BIG GAP BETWEEN THE GOOD ONES AND THE BAD ONES ..

C'MON NOW ON YOUR FEET AND QUIT WHG

WHAT'RE THE CHANCES WE'D BE ROOM-MATES?

...!!

HEY!

SIGH

DON'T MAKE ME EXPLAIN EVERYTHING

WH-WHAT'S THAT SUP-POSED TO MEAN?!

I GUESS THEY DON'T CHOOSE ROOMMATES BASED ON ABILITY.

I DON'T WANT YOU TO DISRUPT MY REST YOU COULD SLEEP ON THE FLOOR, IF YOU WANT

DON'T GO UP AND DOWN MORE THAN YOU NEED TO.

WHAT?

DO YOU NOT UNDERSTAND WORDS?

JUST WHO DO YOU THINK YOU ARE!?!

WH-WHAT?!

I CAN TAKE THE TOP

HUH.?

BUT—

I DON'T WANT TO WASTE ENERGY CLIMBING UP AND DOWN

I'LL TAKE THE BOTTOM BUNK

W-WHITE BLOOD CELL... THANK YOU SO MUCH.

HEY, RED BLOOD CELL. ARE YOU ALL RIGHT?

MM

NO PROB LEM.

White Blood Cell (Neutrophil)
Human job is to destroy foreign substances that enter the body from the outside, such as bacteria and viruses. Neutrophils make up more than half of the white blood cells in the blood.

GRIT-

AND WHITE BLOOD CELL GOT HURT BECAUSE OF IT.. !!

Y-YES.

YOU LOST?

I WENT THE WRONG WAY AGAIN

WHAT WERE YOU DOING IN A PLACE LIKE THIS?

THERE'RE ONLY LYMPH DUCTS UP AHEAD.

SHOCK

HUH?!

THEN LET ME SHOW YOU THE WAY LIKE BEF—

RUMBLE

HUH?!

JUST PASSING BY.

NOTH-ING.

YOU TWO SEEM TO HAVE A LOT OF TIME ON YOUR HANDS.

WHAT DO YOU WANT?

I WAS WONDERING IF YOU GUYS WANTED TO GET IN TROUBLE AND FLUNK.

NO WAY! ARE YOU KIDDING?!

OH, OKAY THEN.

BY THE WAY.

...THE CADETS WHO USED THE BED ACROSS FROM YOURS FLUNKED OUT IN TODAY'S TEST.

I'M GONNA MAKE SURE THAT DOESN'T HAPPEN TO ME.

P-PAUGH!

THWACK

BUT THEY WITHSTOOD THE CHALLENGES TO SOMEHOW ESCAPE FAILURE.

BWAAAUGH!

BOOM

THE HELLISH TRAINING CONTINUED.

UNGH!

SPLASH

YOU THERE! QUIT YOUR WAILING! IF YOU WANT TO DROP OUT, PUT IN YOUR NOTICE AND STOP TAKING UP SPACE!

GLH... UGH.

I-I'M NOT DROPPING OUT, SIR.

HE'S JUST NOT T CELL QUALITY

QUIT BEIN' SO STUBBORN. THE RESULT'S THE SAME IN THE END.

KE KE KE

YOU'RE RIGHT

ARE THE ONES AT THE TOP OF THE CLASS, LIKE US— RIGHT?

THE ONLY ONES WHO'LL MAKE THE CUT

PAT

YAAAAAAH!

MAYBE I'LL GO OVER HERE TODAY

HUH?

OKAY.

TIME TO GO AGAIN TODAY.

HI-YAH!

MISS

!!

WH-WHAT'S HE DOING ...?

PHEW ..

IMMUNITY SUPER DISSOLVING FIST!!

HAAH! GASP!

HAAH!

WHIFF PUNCH

だしスカ

PUNCH WHIFF

だしスカ

YAAAAH! KILLER T PUNCH, 42 STRIKES!

WHIFF

スカ

WHIFF

スカ

HE MUST BE ON THE VERGE OF COLLAPSE AFTER TODAY'S TRAINING.

IN VIVO ULTIMATE SECRET TECHNIQUE! ANTIGEN SUPER PUMMELING SMASH-INTO-PIECES FIST

THWACK

ガス

—AND WHAT "SECRET TECHNIQUE"?

IDIOT

WHATEVER. . NOTHING TO DO WITH ME.

YAH!

THWACK

ガス

THWACK

ガス

HAH!

SWISH

シュッ

BOOM

ドゴォ

SWISH

シュッ

SHF

AH, YOUTH! AM I RIGHT?

CLICK

YAAAH!

1

DO THEY INTEREST YOU, TOO?

NO, NOT REALLY . .

...

IT'D BE NICE IF THEY MADE THE CUT, DON'T YOU THINK?

HA HA, NOW IF THEY FOUGHT HERE, THAT WOULD REALLY BE FUN.

IF YOU SAY SO

WE'RE DOING A SURPRISE TEST TODAY!!

MURMUR

THE RULES ARE THE SAME AS USUAL! JUST ATTACK THE ANTIGEN CUTOUTS!

BUT ALMOST ALL OF YOU WILL FAIL THIS TEST!

DON'T LOSE YOUR HEADS, RUNTS!!

FOR THOSE OF YOU WHO HAVEN'T PROPERLY TRAINED UP UNTIL NOW, TODAY WILL BE GOOD-BYE!

DOES THE ENEMY TELL US ITS PLANS AHEAD OF TIME?!

MUS

YOU JUST HAVE TO DO WHAT YOU USUALLY DO!

HEH DON'T WORRY

CLAMOR

GOOD, YOU'RE ALL HERE!!

THUMP

THUMP

G... GUH

WHAT'S "POSITIVE SELECTION"?

THUMP

I'M SO NERVOUS, I'M GETTING SICK...

YOU'LL NOW TAKE THE POSITIVE SELECTION TEST!!

GLAMOR

Positive and Negative Selection

The thymus p eserves use u T cells by "posit ve select on" and removes harmfu T ce s that attack the body by "negat ve se ect on." Th s process se ects ymphocytes tha o e able to acc ra e y d scern ce s of the body and fore gn ones such as pathogens t is sa d that only a few percen become T re s n the end.

YOU HAVE A HABIT OF CLOSING YOUR EYES WHEN ATTACKING.

YOU'LL NEVER HIT ANYTH NG THAT WAY. WHEN ATTACKING YOUR TARGETS, KEEP YOUR EYES OPEN UNTIL THE VERY END!

HUH?

THUMP

THUMP

WHAT WAS THAT?

WH-

CLAMOR CLAMOR

GOOD LUCK!

JUST LIKE ALWAYS... I'M READY!

ATTACK THE ANTIGEN CUTOUTS... AND LEAVE THE ORDINARY CELL CUTOUTS ALONE!

GLANCE

OH!

THAT HEAD ...!!

ANTI-GEN SIGHT-ED!!

YEAH! NOW I PASS—

WHACK

RUMBLE

RMBL

AWK WARD

THANK YOU!

S-SO LONG GOOD LUCK WITH THAT

I'D BETTER STAY OUT OF THIS.

AAAUGH!

CRASH

TH. THANKS

THIS AREA'S UNDER CONSTRUCTION, MISS!

DANGLE

WHOA ..?!

!?

IT'S LIKE HER AURA IS SAYING, "I'M GOING TO DO THIS ALL ON MY OWN!"

RED BLOOD CELL IS BURNING WITH PASSION!

パカ
OPEN
WHAT ?!
CELL
TH-THIS IS...
T.E.C.
YER OUT!!
THAT CUTOUT IS AN ORDINARY CELL HOLDING A LARGE STONE FOR PICKLING VEGETABLES!
THAT'S DIFFERENT FROM THE OTHER TESSSTS—
PEEL
SILENCE

YER OUT !!

AAALIGH! IT WAS AN ORDINARY CELL WEARING A PADDED HOOD!

YER OUT !!

AAALIGH! I THOUGHT IT WAS A VIRUS, BUT IT WAS JUST A FANCY HAT!

AND SO, THE T CELL CADETS FAILED ONE BY ONE ..

CELL

CEL

IT'S MY TURN. .

RAH !

RAH !

AND NOW...

RAH !

GULP

ナ？……

RGTL-ナイフ

GUH!

SNAP

YOU HAVE A HABIT OF CLOSING YOUR EYES WHEN ATTACKING.

KEEP YOUR EYES OPEN!!

AH!

THERE!!

THIS ONE'S AN ORDINARY CELL HOLDING UP A PIN-CUSHION ...!!

A SEWING KIT?

CHIRIN

CHIRIN

HA!

TH-THAT WAS CLOSE!!

AH!

HUH?!

SHEESH... MAKING ME NERVOUS ...

RMBL

RMBL

RMBL

WH-WHICH WAY?

WANDER わら

NOW LEFT!

RIGHT!

WANDER わら

IT'S RIGHT BEHIND YOU!

WANDER わら

RIGHT! TURN TO YOUR RIGHT!

SNAP OUT OF IT, YOU IDIOT! YOUR OTHER RIGHT!

WH-WHICH WAY IS RIGHT AGAIN?

BEHIND YOU! BEHIND!

HUH? WHAT?

NO, ABOVE YOU!

RIGHT TO YOUR RIGHT!

HWOOOOO...

BEHIND YOU IS BEHIND YOU!

WH-WHICH WAY IS BEHIND ME?

GUH

USE THE IN VIVO ULTIMATE SECRET TECHNIQUE! ANTIGEN SUPER PUMMELING SMASH-INTO-PIECES FIST!!!

CRACK

WHAM

HOW DO YOU KNOW THAT MOVE !?!

RAISE

YOU PASS!

HUH?

YOU MADE IT

GOOD FOR YOU.

..

YOU'RE LUCKY.. THEY SAID YOU HAVE THE POTENTIAL TO BE A KILLER, A HELPER, OR A REGULATORY.

..

IT WAS JUST DUMB LUCK ..

TO BE HONEST, I DON'T KNOW IF I CAN CUT IT WILL I REALLY MAKE IT AS A T CELL?

IN THAT CASE..

HMPH.

!

YOU DON'T KNOW IF YOU CAN CUT IT? THEN QUIT!

IT'S NOT TOO LATE TO SUBMIT YOUR WITHDRAWAL PAPERS.

NO ONE HAS THE TIME TO CARE ABOUT THEM. THE WORLD

THE WORLD OF CELLS ISN'T THAT EASY!

HERE'S A FREE LESSON. ALL THOSE DUMB FEELINGS OF YOURS?

WH- WHAT DID YOU SAY...?!

...WILL NEVER GET...

...HOW I...

A GIFTED JERK LIKE YOU.

"DUMB FEEL-INGS"?

YOU IDIOT !!!

...FE—

WHAM

NOW IT'S TIME TO HARDEN YOUR RESOLVE.

HUH ?

YOU FACED YOUR OWN WEAKNESS.

YOU'VE GOT NO CHOICE NOW BUT TO GIVE IT YOUR BEST

WAKE UP.

Y-

YOU ...!

GRIP

REACH

EVEN IF YOUR EFFORTS LOOK USELESS TO OTHERS... YOU KEEP AT IT ON YOUR OWN

THAT'S YOUR STRENGTH, ISN'T IT?

HUSTLE

VEIN

BUSTLE

HEY, DON'T JUMP OUT LIKE THAT!

WHITE BLOOD CEL

W-WELL, I'LL BE ON MY— EEK!

CRASH!

...

THANK YOU. THANK YOU.

A-ARE YOU ALL RIGHT?!

I-I-I... I'M F NE. SO SORRY FOR THE TROUBLE.

THIS IS NO 1146. I'M GOING TO GO PATROL THE BODY, OVER.

ALL RIGHTY I'M GOING TO WANDER AROUND NEAR THE LIVER, THEN.

EASY MAP

FIRST, THE INFERIOR VENA CAVA! GOT IT!

Lungs

Heart

Inferior Vena Cava
The largest vein in the human body. Blood from the lower part of the body and other areas flows here and then into the heart's right atrium.

GOT A LOT MORE WORK AHEAD OF US

REALLY?

SO, IF I GO THIS WAY—

WANNA GET SOMETHING SWEET AROUND HERE?

GOOD.

OKAY! I'M DONE WHINING.

HEH... SOUNDS GOOD.

THE WORLD NEEDS SOMEONE TO GIVE ORDERS TO CLUMSY GUYS LIKE YOU.

AS FOR ME...I KNOW NOW WHAT I'M SUPPOSED TO DO.

I'M...GOING TO BECOME STRONGER!

I'LL LIFT WEIGHTS LIKE CRAZY...I'M GONNA DO WHATEVER I CAN!

I'M GOING TO WORK OUT UNTIL I CAN BEAT ANY ENEMY WITH ONE HIT!

!

YOU'LL SCARE THE CELLS YOU LEAD.

HEH HEH IF YOU'RE GOING TO BE A COMMANDER, LOOSEN UP A BIT

YOU WANT ME TO *LOOSEN UP?* JUST WAIT AND SEE...

HMPH... I DON'T NEED YOU TO TELL ME THE OBVIOUS!

THOSE GUYS ARE SO SILLY...

SO THAT'S WHAT HAPPENED...

LOOSE ルーズ

OH COME OOOOOON: OFFICE WORK IS PRETTY HARD. YOU WANNA TRY IT? YOU WANNA SWIIITCH?

LOOSE ルーズ

THAT'S WHY... THOSE TWO ARE THE WAY THEY ARE NOW...

LL

YOU'RE JUST SIPPING TEA WHEN WE PUT OUR LIVES ON THE LINE OUT THERE!

ムキ FLEX

ムキ FLEX

...?

HEY WHAT'RE THOSE PHOTOS ?

HUH?

WHAT'RE YOU GUYS LOOKING AT OVER THERE?

HM ?

ギク JOLT

LUNGE

AR AA AGH

KA KI

WHOA WHAT'S THAT

PLEASE, CAN'T WE JUST BURN THEM. ?

GIVE THOSE TO ME!! BURN THOSE PICTURES RIGHT NOW—

BOOM

HEY, WHAT'RE YOU DOING? THESE ARE IMPORTANT RECORDS

STOMP STOMP STOMP STOMP

*TRANSMIGRATING

THOSE TWO...

SMASH

CRASH

...REALLY HAVEN'T CHANGED A BIT...

CHAPTER 12: END

Cells at Work!

Life of a Killer T Cell

Cells at Work!

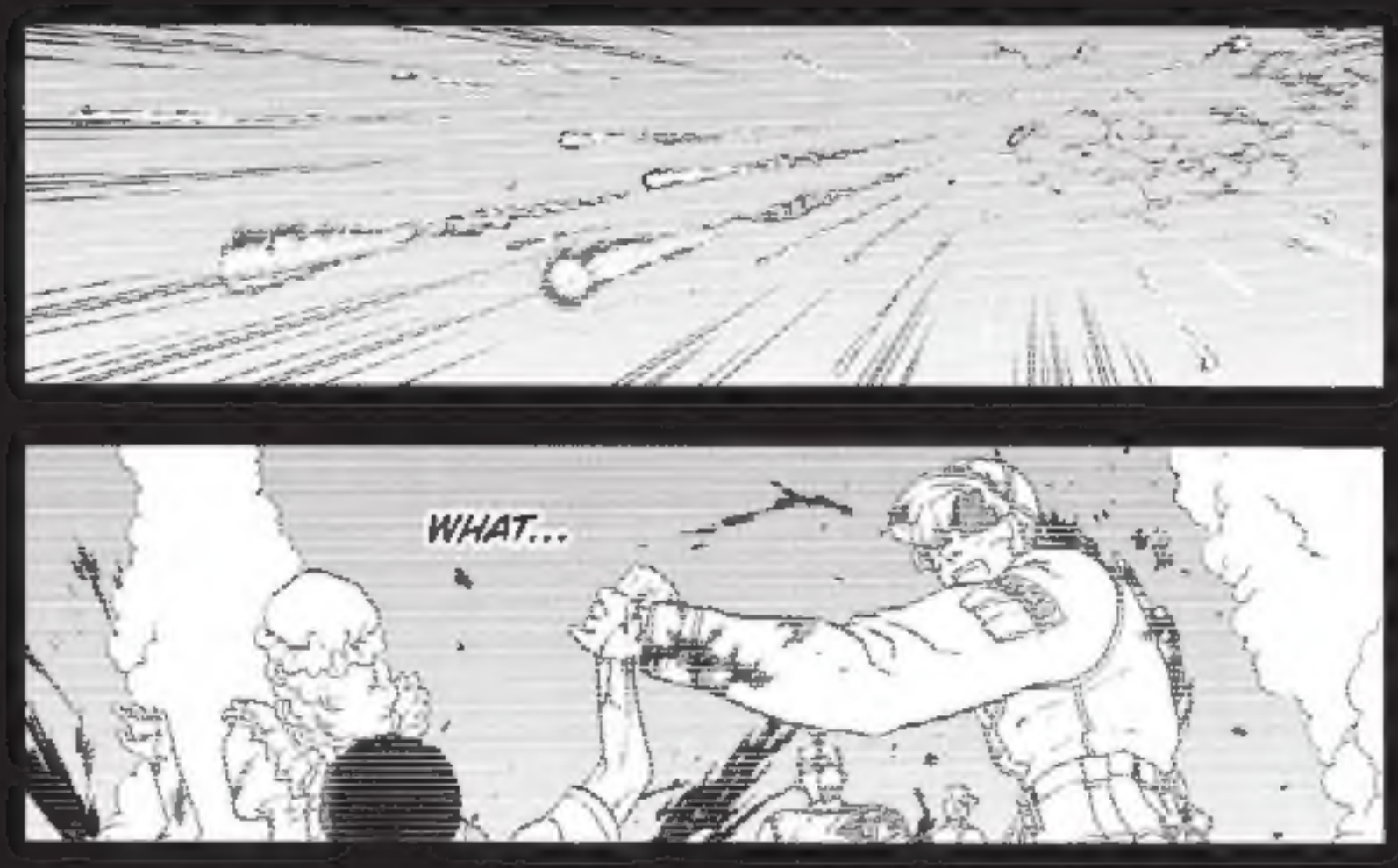
はたらく細胞

WHAT...

...ARE THESE IMAGES...?

...INTO MY HEAD...!!!

THEY'RE FLOWING...


WHAT...
...ARE THESE IMAGES...?
...INTO MY HEAD...!!
THEY'RE FLOWING...

WHAAAAUGH!?!

WAKE!!

Memory Cell
A lymphocyte that remembers the immune responses to antigens. They are prepared against invasion by the same bacteria or viruses.

CHAPTER 13: ACQUIRED IMMUNITY

HAH!
HAAH HAAH HAAH... HAAH HAAH HAAH HAAH HAAH HAAH...

THUD
ドゥ

THUD
ドゥ

B Cell (Antibody-producing Cell)
A type of lymphocyte that makes weapons called antibodies to fight antigens such as bacteria and viruses.

HAAH!
HAAH!
HAAH!
HAAH!
A MESSENGER FROM THE OUTSIDE WORLD...?!
M-METEOR SHOWER...
CELLS FIGHTING EACH OTHER...
HUH?
WHAT'S THE MATTER, MEMORY CELL?
JUMPING UP SUDDENLY LIKE THAT.
I'M NOT A PHAGOCYTE. WHY WOULD I HAVE SUCH GORY DREAMS...?! IT DOESN'T MAKE SENSE!
WHAT WERE THOSE IMAGES...?
Phagocytosis
A process by which cells called phagocytes—such as monocytes, macrophages, and neutrophils—engulf and break down bacteria and foreign substances.
THAT DREAM...
IF THAT'S THE CASE... DID I SEE THE FUTURE OF THIS BODY?! THEN... THAT MEANS...
DID I SEE A MOMENT FROM THE END OF THE WORLD?!
THAT DEFINITELY WASN'T AN ORDINARY DREAM...
MEMO-RY?

GOOD WORK TODAY!

MY SHOULDERS ARE ALL STIFF!

SNEAK

ZO-1DRUN-O

U-TURN

HUH? TH-THIS WAY?

WHY... WHY ARE YOU REVERSING DIRECTION, RED BLOOD CELL...?

HUH? WHA? IS IT REVERSED ON THE MAP?

UM...UM... THIS IS THE VEIN. SO—

PLOD PLOD PLOD

WHITE BLOOD CELL TYPE

SNEEEEEAK

HEY! WHY ARE YOU GOING THE WRONG WAY?! YOU JUST WENT THROUGH THIS VALVE!

WHAM

WHAA?! I-I'M SO SORRY!!

Venous Valve
These prevent blood from flowing backwards. They force the blood traffic in the veins to be one-way, heading toward the heart.

OHH...

I HAD THE MAP UPSIDE DOWN...

SO DUMB!

HEE HEE!

...

SNEAK